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Seabirds on Colonsay and Oronsay
Changes in breeding wader numbers on Scottish farmed land
The Atlantic Puffin population of the Shiant Islands

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Seabirds on Colonsay and Oronsay, Inner Hebrides

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Breeding season populations of seabirds were counted on Colonsay and Oronsay, during 1999 and 2000. Results of the counts are presented along with comparisons with previous counts made in 1969 and in 1985–86. The islands hold the largest colonies of Northern Fulmar, Black-legged Kittiwake, Common Guillemot and Razorbill in Argyll. Populations of Northen Fulmar, Lesser Black-backed Gull, Great Black-backed Gull, Common Guillemot and Razorbill have risen since the mid 1980s. Populations of other species have remained largely unchanged since then, except for that of Black-headed Gull which has declined significantly.

Introduction

The periodic survey of seabirds throughout Britain and Ireland allows regular reappraisal of their status and also allows the identification of sites of national and regional conservation importance. In this paper we report on the recent Seabird 2000 survey (Mitchell, 1999) on the islands of Colonsay and Oronsay, Argyll and Bute, and by making comparisons with previous surveys highlight their importance as a seabird station in the Inner Hebrides.

Methods

In June 1999, all the seabirds (except terns) were counted on Colonsay to the north of Kiloran Bay, the east coast of Colonsay, the whole of Oronsay and that part of Colonsay south of Port Mhor. These counts were land based, although a small boat was used to reach the offshore islets of Oronsay. In 2000 all seabirds between Port Mhor and Kiloran Bay were also counted between 4 and 15 June. This section was largely counted from the land, using the wave platform below the cliffs at low tide for access to some of the cliff sections otherwise invisible from above. In addition, some small sections, which were not visible from land, were counted from a small boat on 15 June 2000. Also in 2000 a count of all the terns on the islands was carried out from land between 4 and 18 June, with a small boat being used to reach offshore islands. Additional pre breeding counts of Black Guillemots were made on Colonsay in April 2001. All counts adopted the methodology of the Seabird 2000 Survey (www.jncc.gov.uk/seabird2000) which are based on those in Walsh *et al* (1995).

The previous assessments of seabird populations on these islands were made during mid to late May; in 1969 during Operation Seafarer by J A Fowler (NCC) and by John and Pamela Clarke in 1985 and 1986 (Clarke & Clarke, 1986 & 1987). In this paper, where possible, comparisons are made with these surveys.

Different count techniques were used for various species groups. For most species counts were made of apparently occupied nests (AON). In the case of Northern Fulmar a similar unit - apparently occupied site (AOS) was used. To allow comparison with the other counts, those of gulls made in 1985 and 1986 have been expressed as estimates of apparently occupied nests (est AON) by dividing the original counts (which were of individuals) by 2. This method was not used for Black-legged Kittiwakes, which were counted as AONs in 1985 and 1986 (Clarke & Clarke, 1986, 1987).

The counts for gulls and terns during Seabird 2000 and in 1985 and 1986 were made from vantage points (the method used in Operation Seafarer is not known).

Auks were counted as individuals (ind). To allow comparison with later counts, the Operation Seafarer count of Black Guillemot, which was originally of breeding pairs, has been expressed as estimated individuals (est ind) by multiplying the number of pairs by 2.

For the present survey the Colonsay coast was divided into 60 sections, and Oronsay into 17; these data have been amalgamated into 4 areas of Colonsay and for Oronsay as a whole (Figure 1). The inland areas of both islands were also surveyed, although no breeding colonies of seabirds were found.

It should be noted there is a slight difference in the count boundary between East and North Colonsay for data for Seabird 2000, which used Balnahard Bay as a boundary, while Clarke & Clarke (1986 & 1987) used the eastern end of Eilean Dubh. This difference has only a marginal effect on counts for the various areas for Northern Fulmar and Black Guillemot.

Results and Discussion

Northern Fulmar *Fulmarus glacialis*

In total 1323 AOS were found on Colonsay during Seabird 2000. None were found on Oronsay or East Colonsay. Fulmars increased over 37% from the 1986 count. This increase however masks a changing trend in the population on Colonsay. The population at 3 sites which are monitored annually peaked during the mid 1990s and have in recent years declined (Jardine, 1998). The increase in numbers between the counts in 1985 and 1986 is not fully understood, but may have been a consequence of more birds frequenting the cliffs during the poor weather conditions experienced during the 1986 count, or may have been a result of many Fulmars prospecting intermittently.

	Seabird 2000 (AOS)	Clarke & Clarke 1986 (AOS)	Clarke & Clarke 1985 (AOS)	Operation Seafarer 1969 (AOS)
North Colonsay	248	101	89	35
West Colonsay	1039	855	583	218
SW Colonsay	36	10	10	0
E Colonsay	0	2	0	0
Total	1323	968	682	253

European Shag *Phalacrocorax aristotelis*

During Seabird 2000, 170 AON were found on Colonsay and one on Oronsay - the first recorded breeding. There has been little change in the Shag population on Colonsay since the mid 1980s (ie +4% on 1985, and +42% on 1986). The reduction from 165 AON in 1985 to 120 AON in 1986 followed the seabird wreck in the Firth of Lorne in July 1985 (Craik, 1986).

	Seabird 2000 (AON)	Clarke & Clarke 1986 (AON)	Clarke & Clarke 1985 (AON)	Operation Seafarer 1969 (AON)
North Colonsay	15	2	4	1
West Colonsay	155	118	161	108
Oronsay	1	0	0	0
Total	171	120	165	109

Black-headed Gull *Larus ridibundus*

There has been a major decline in the breeding population (-93%) of Black-headed Gulls on the islands with only 5 AON found during Seabird 2000. The former colony near Ardskenish farmhouse is now extinct, following a period of 5 years of complete breeding failure (pers obs) due, it is thought, to predation by Otters *Lutra lutra* and feral cats.

	Seabird 2000 (AON)	Clarke & Clarke 1986 (est AON)	Clarke & Clarke 1985 (est AON)	Operation Seafarer 1969 (AON)
North Colonsay	0	0	N/a	1
West Colonsay	0	0	N/a	0
SW Colonsay	3	33	N/a	35
East Colonsay	0	0	N/a	0
Oronsay	2	38	N/a	4
Total	5	71	36	40

Mew Gull *Larus canus*

There has apparently been a slight fall (-17%) in the total number of breeding Mew Gulls on Colonsay and Oronsay since 1986, although differences in census methods used for the 2 surveys makes direct comparison difficult. There have also been significant changes in the distribution of this species, with reductions on Oronsay, West and East Colonsay, but increases in South West and North Colonsay. These changes to slightly less accessible parts of the island reflect the ephemeral nature of colonies of this species which can move in response to predation or disturbance from other species and humans.

	Seabird 2000 (AON)	Clarke & Clarke 1986 (est AON)	Clarke & Clarke 1985 (est AON)	Operation Seafarer 1969 (AON)
North Colonsay	20	10	4	1
West Colonsay	1	5	8	0
SW Colonsay	24	9	10	5
East Colonsay	16	20	10	0
Oronsay	20	54	14	22
Total	81	98	46	28

Lesser Black-backed Gull *Larus fuscus*

There has been a very large increase (+451%) in Lesser Black-backed Gulls. This has been through the increase in the existing colony on Oronsay, and through the establishment of a new colony at Pigs Paradise (West Colonsay), where previously only one or 2 pairs were found.

	Seabird 2000 (AON)	Clarke & Clarke 1986 (est AON)	Clarke & Clarke 1985 (est AON)	Operation Seafarer 1969 (AON)
North Colonsay	18	29	13	1
West Colonsay	40	0	1	2
Oronsay	168	12	17	0
Total	226	41	31	3

Herring Gull *Larus argentatus*

There has apparently been little change in the population of Herring Gulls since the increases reported by Clarke & Clarke (1986,1987) in the mid 1980s. Nor has there been any great change in the distribution within the islands, although trends in individual colonies are masked, eg on Oronsay there has been a shift from nesting in the south west to the north east.

	Seabird 2000 (AON)	Clarke & Clarke 1986 (est AON)	Clarke & Clarke 1985 (est AON)	Operation Seafarer 1969 (AON)
North Colonsay	369	390	409	84
West Colonsay	392	325	320	155
SW Colonsay	28	24	0	36
East Colonsay	14	10	3	2
Oronsay	318	411	368	67
Total	1121	1160	1100	344

Great Black-backed Gull *Larus marinus*

There has been an apparent increase of 23% in the breeding population of Great Black-backed Gulls on the islands since 1986, largely on Colonsay, where breeding has now been found on the east coast. The increase on Oronsay between 1985 and 1986 may reflect different levels of human persecution, which was known to occur, in each of these years.

	Seabird 2000 (AON)	Clarke & Clarke 1986 (est AON)	Clarke & Clarke 1985 (est AON)	Operation Seafarer 1969 (AON)
North Colonsay	11	5	5	3
West Colonsay	10	10	10	4
SW Colonsay	11	6	0	3
East Colonsay	2	0	0	1
Oronsay	42	41	28	6
Total	76	62	43	17

Black-legged Kittiwake *Rissa tridactyla*

There has been a modest increase in the Black-legged Kittiwake population on Colonsay since the mid 1980s. The increase is 4% on the population of 1985 and 13% on the population of 1986, following the drop between these years which coincided with the Loch Linnhe seabird wreck in July 1985 (Craik, 1986). Black-legged Kittiwakes remain confined to colonies between Kiloran Bay and Port Mhor.

	Seabird 2000 (AON)	Clarke & Clarke 1986 (est AON)	Clarke & Clarke 1985 (est AON)	Operation Seafarer 1969 (AON)
West Colonsay	6485	5713	6212	2136
Total	6485	5713	6212	2136

Terns *Sterna* spp

Details of the breeding populations of terns found in Seabird 2000 are presented below. Species comparisons with the previous surveys are difficult as Clarke & Clarke (op cit) did not record terns. Records are available for the total number of birds but do not distinguish between Common and Arctic terns though they allow comparison with the current total number of birds recorded. Variation between years is not unusual for this group and this is reflected in the reported counts given below. It is encouraging, however, to note that populations have risen from the lows recorded in the early 1990s.

Year	Number of Common and Arctic Terns (ind)	Source
1969	130	Operation Seafarer 1969
1984	450-500	Clarke & Clarke (pers obs)
1987	748	Clarke & Clarke (pers obs)
1991	c550	Clarke & Clarke (pers obs)
1992	c200	Clarke & Clarke (pers obs)
1993	c270	Clarke & Clarke (pers obs)
2000	614	Seabird 2000

Common Tern *Sterna hirundo*
A total of 31 AON were recorded. The colony at Port Olmsa (East Colonsay) which had 5 pairs in 1992 appears to be in decline; only one pair was found.

	Seabird 2000 (AON)	Operation Seafarer 1969 (AON)
East Colonsay	1	0
Oronsay	30	7
Total	31	7

Arctic Tern *Sterna paradisaea*
In total 201 AON of Arctic Terns were found in June 2000; a large proportion of these were on offshore islets and future surveys of these islands should use a small boat to ensure that full coverage is achieved. It is believed that the low count in Operation Seafarer for this and a number of other species which use offshore islets may have been a result of incomplete coverage.

	Seabird 2000 (AON)	Operation Seafarer 1969 (AON)
North Colonsay	11	12
SW Colonsay	85*	15
Oronsay	105	31
Total	201	58

* also 150 non breeding individuals present

Little Tern *Sterna albifrons*
Two AONs and a single bird were found in SW Colonsay during Seabird 2000; there are no previous breeding records of this species on Colonsay or Oronsay.

Common Guillemot *Uria aalge*
There has been a large increase (+93%) in the number of Common Guillemots since the mid 1980s. This is not surprising as the annual survival of adult Common Guillemots from Colonsay is known to be very high at 97% (Harris *et al*, 2000). Some of this increase, however, may also reflect slight differences in counting technique and timing as Clarke & Clarke (1986, 1987) counted only birds they felt were on breeding ledges in mid May. The Seabird 2000 count was based on all birds using the cliffs in June, other than those only loosely associated with the colony (ie on intertidal rocks). The very much lower count recorded in Operation Seafarer may also in part be due to the early date of the count in late May.

	Seabird 2000 (ind)	Clarke & Clarke 1986 (ind)	Clarke & Clarke 1985 (ind)	Operation Seafarer 1969 (ind)
North Colonsay	75	40	30	0
West Colonsay	26394	13567	13430	1595
Total	26469	13617	13460	1595

Razorbill *Alca torda*

The level of increase in Razorbills (+90%) since the 1980s is very similar to that of Common Guillemots. Unlike Common Guillemots which showed similar increases in North and West Colonsay, the increases in Razorbill have not been uniform; those of North Colonsay (+227%) exceed those in West Colonsay (+87%) suggesting that colonisation is still proceeding to the north of Kiloran Bay.

	Seabird 2000 (ind)	Clarke & Clarke 1986 (ind)	Clarke & Clarke 1985 (ind)	Operation Seafarer 1969 (ind)
North Colonsay	108	33	62	0
West Colonsay	2631	1407	1719	304
Total	2739	1440	1781	304

Black Guillemot *Cepphus grylle*

The number of Black Guillemots recorded has decreased (-66%) since the dawn count made in 1987. It is likely that this reduction reflects a change in counting methods as Seabird 2000 was unable to count all areas at dawn during April (West and North Colonsay were only partially counted). The figures presented for Seabird 2000 should be regarded as minimum estimates of the current population.

	Seabird 2000 (ind)	Clarke & Clarke 1987 (ind)	Clarke & Clarke 1986 (ind)	Operation Seafarer 1969 (est ind)
North Colonsay	49	183	27	4
West Colonsay	21	167	26	10
SW Colonsay	33	21	0	6
East Colonsay	7	15	27	2
Oronsay	24	13	21	0
Total	134	399	101	22

Atlantic Puffin *Fratercula arctica*

While Atlantic Puffins have been seen offshore from Colonsay in most years, previous surveys have not found them breeding. Seabird 2000 found a single bird ashore at Pigs Paradise in June 2000, but breeding was not confirmed.

Other species

There are breeding season records of Manx Shearwater *Puffinus puffinus*, European Storm Petrel *Hydrobates pelagicus*, Great Cormorant *Phalacrocorax carbo*, and Great Skua *Catharacta skua* on Colonsay and Oronsay although breeding has not been proven. The records of Manx Shearwater and Great Skua are of flying birds that are believed to have come from other colonies in western Scotland. Those of Great Cormorant are of single feeding and loafing birds. The majority of these are immatures; the few adults recorded are thought to have come from the nearby colony on Mull. European Storm Petrels have been mist netted on Colonsay using tape lures during the breeding season; there is no evidence to suggest they were breeding birds.

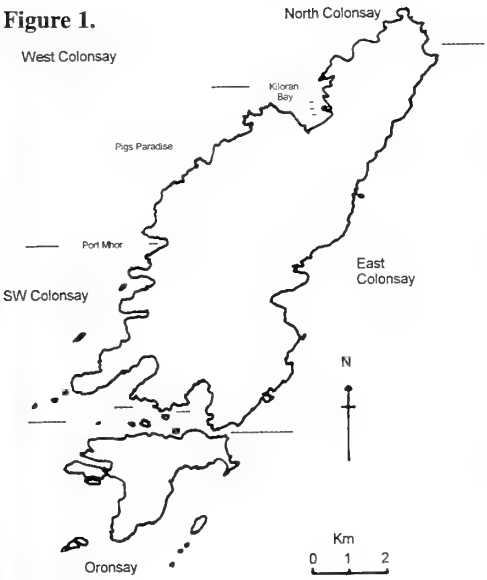
Operation Seafarer recorded 2 Arctic Skuas *Stercorarius parasiticus* on the ground on Oronsay, although breeding was not proven. This species is still regularly seen from the islands and as breeding has never been found the birds are presumed to be from neighbouring colonies on Jura or Coll.

Table 1 ***Comparison of major seabird colonies in Argyll. Data are from Seabird 2000 counts in 1999 - 2001 (Daw, 2000; I Mitchell pers comm)***

Species	Unit	Colonsay & Oronsay (total)	Colonsay (North & West)*	Treshnish	Tiree (Ceann a Mhara)	Sanda
Fulmar	AOS	1323	1287	1078	1382	500
Manx Shearwater	AOB			1283		200
Storm Petrel	AOB			1700		200
Cormorant	AON					21
Shag	AON	171	170	601	160	516
Great Skua				1		
Black-headed Gull	AON	5				
Common Gull	AON	81	21	8		44
Lesser BB Gull	AON	226	58	40	55	66
Herring Gull	AON	1121	761	225	192	821
Great BB Gull	AON	76	21	342	6	54
Kittiwake	AON	6485	6485	786	899	9
Common Tern	AON	31		6		
Arctic Tern	AON	201	11	143		
Little Tern	AON	2				
Guillemot	Ind	26469	26469	9566	1974	2174
Razorbill	Ind	2739	2739	1232	394	2944
Black Guillemot	Ind	134	70	217	16	442
Puffin	Ind	1	1	1232		354

* Colonsay (North and West) are included in the Colonsay and Oronsay Total.

Figure 1.



Discussion

The Seabird 2000 survey has shown that there have been substantial increases in the populations of several seabirds on Colonsay and Oronsay, while others have remained similar to those recorded in the 1980s. Only one species, Black-headed Gull, has declined significantly.

There are 4 seabird colonies in Argyll which hold a wide guild of seabird species (Table 1). The results of Seabird 2000 confirm Colonsay and Oronsay as of primary importance within the region. The area of north and west Colonsay is identified as an Important Bird Area principally for Corncrake *Crex crex* and Red - billed Chough *Pyrrhocorax pyrrhocorax* and is protected as a Site of Special Scientific Interest. The area has been designated as a Special Protection Area (SPA) under the EU Birds Directive with specific reference to Chough, although the assemblage of cliff-nesting seabirds is considered of only incidental interest. The results of Seabird 2000 suggest that this view may require revision.

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Changes in breeding wader numbers on Scottish farmed land during the 1990s

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A repeat survey of 'farmed land' in Scotland comprising c400 one km squares, together with 52 sites covering 70 km² previously identified as key wader breeding sites, was undertaken between 1997 and 2000. Each of these sites had originally been surveyed in 1992 or 1993. Revised Scottish 'farmed land' population estimates of 91,000 pairs of Eurasian Oystercatcher, 87,000 Northern Lapwing, 33,000 Common Snipe, 46,000 Eurasian Curlew and 13,000 Common Redshank were calculated. There were no significant overall changes in wader numbers between 1992-93 and 1997-2000. The ability to detect significant trends was poor due to a combination of a short time period between surveys and considerable variation in wader trends both between sites and between regions. These results are compared with findings from other monitoring schemes and factors explaining variations discussed.

Introduction

Five species of breeding waders, Eurasian Oystercatcher *Haematopus ostralegus*, Northern Lapwing *Vanellus vanellus*, Common Snipe *Gallinago gallinago*, Eurasian Curlew *Numenius arquata* and Common Redshank *Tringa totanus*, are commonly associated with farmland habitats in the United Kingdom. The populations of these species on 'farmed land' in Scotland were previously assessed in 1992 (O'Brien 1996). Considerable numbers of waders, in particular Eurasian Oystercatcher and Eurasian Curlew both of which exceeded previous UK population estimates, were found to be thinly distributed across much of farmland on mainland Scotland with higher densities of all species on the Northern and Western Isles.

Recent surveys in the UK and in Europe have indicated considerable declines in numbers of some breeding waders giving cause for concern over wader populations on farmland (eg Wilson *et al* 2001, Hagemeijer and Blair 1997, Gibbons *et al* 1993, Marchant *et al* 1990). For example,

- the number of occupied 10 km squares in Britain had declined by 9% for Northern Lapwing, 19% for Common Snipe, 3% for Eurasian Curlew and 12% for Common Redshank between 1968-72 and 1988-91 (Gibbons *et al* 1993).
- Northern Lapwing populations declined by 49% between 1987 and 1998 across England and Wales (Wilson *et al* 2001).
- Northern Lapwing and Eurasian Curlew declined significantly by c60% in Northern Ireland between 1987 and 1999 (Henderson *et al* 2002).
- Eurasian Oystercatcher populations, by contrast, have increased both in numbers and distribution in the UK (an increase of 11% in the number of occupied 10 km squares between 1968-71 and 1988-91) and Western Europe (Gibbons *et al* 1993, Hagemeijer and Blair 1997).

Little quantitative information is available on the changes in wader populations in Scotland. A comparison of breeding densities on Scottish

farmland in 1983 and 1992 suggested that Northern Lapwing populations had remained stable, but that Common Redshank and Eurasian Oystercatcher populations may have increased (Galbraith *et al* 1984, O'Brien 1996). These comparisons were based, however, on different survey areas using different monitoring techniques and with differing criteria as to what constituted 'farmed land'.

The main aims of this study were to estimate the population size and the change in numbers of breeding waders on 'farmed land' in Scotland between 1992-93 (O'Brien 1996) and the present study.

Methods

The present project was a repeat of a survey previously undertaken in 1992-93 (O'Brien, 1996). Scotland was split into 5 regions - Scottish mainland (including the Inner Hebrides), Orkney, Shetland, the southern isles of the Outer Hebrides (hereafter referred to as 'the Uists'), and the northern Isles of the Outer Hebrides. Scottish 'farmed land' was defined as land within the classes 1 to 5.3 of the Macauley Land Capability for Agriculture system (Soil Survey of Scotland, 1982). Any 1 km square that comprised predominantly 'farmed land' (75% of the square on Scottish mainland, 50% of the square on Orkney, Shetland and the Outer Hebrides) was included in the survey. In addition, 186 of 232 sites considered important for lowland breeding waders in mainland Scotland (referred to subsequently as 'identified wader sites') were surveyed in 1992. Accordingly, the random sites selected in Scottish mainland comprised a sample of the Scottish mainland excluding the identified wader sites; 224 of the random squares on mainland Scotland and 52 of the 'identified wader sites' were resurveyed in 1997. Twelve random squares were not surveyed in 1997 due to a combination of poor weather early in the survey period and access permission being refused by landowners. The random sites on Orkney (65 squares compared with 67 in 1993) and Shetland (60 squares compared with 61 in 1993) were resurveyed in 1998 while the 50 random squares in the Southern Isles of the Outer Hebrides were surveyed in 2000. None of the remaining identified wader sites or the sites on the Northern Isles of the Outer Hebrides were included in the resurvey.

The same standard field by field method for surveying breeding waders was used as in 1992-93 (O'Brien 1996, Bibby *et al* 1992, Gilbert & Gibbons 1999). All surveyors were provided with 3 copies of a map of the survey area together with 3 sets of recording forms. Each map was marked with the site boundary, within which all fields were numbered. Surveyors were asked to visit sites on 3 evenly spaced occasions, visit 1 between 18 April and 8 May, visit 2 between 9 May and 29 May and visit 3 between 30 May and 19 June.

Surveyors were asked to walk through, and get to within 100 metres of any point in each field, and to look 200-400 metres ahead, scanning with binoculars to note the distribution of all waders. All registrations were mapped, although only birds considered to be breeding within the survey area were counted.

Calibration relating the number of waders recorded on a site to the estimated number of pairs on a site was undertaken in the same manner as in 1992. These are as follows:

Eurasian Oystercatcher: the maximum number of pairs (where 'pairs' relates to the number of paired birds, displaying birds or single birds attached to a particular site) recorded on any one of the 3 visits (Smith, 1983).

Northern Lapwing: the maximum number of individuals recorded on a site (where individuals excludes all obviously nonbreeding flocks of birds) on any visit in April and May (ie the first 2 visits in this survey) divided by 2 (Barrett and Barrett, 1984).

Common Snipe: the maximum number of drumming plus chipping birds recorded on any one of the 3 visits. This is the figure used to compare changes in the numbers of Common Snipe within a region. This is related to the number of pairs of Common Snipe by multiplying the number of drumming plus chipping birds by 1.74 (Green 1985).

'Eurasian Curlew method 1': as with Eurasian Oystercatcher, the maximum number of pairs recorded on any one of the 3 visits (Smith, 1983).

'Eurasian Curlew method 2': the average number of individuals recorded on a site between mid April and mid June, multiplied by 0.71 with 0.1 added for each of the sites where Eurasian Curlew were recorded (Grant *et al* 2000).

Common Redshank: the average number of individuals recorded on site between mid April and 20 May (ie the first 2 visits) (Cadbury *et al* 1987).

Two estimates of current Eurasian Curlew populations were made; one, based on the original 1992/93 method allowed comparisons with the first survey, and one based on methods recently proposed by Grant *et al* (2000).

The wader populations of the Uists were estimated by a single visit during late May/early June in 2000. For each of the 50 randomly selected 1 km squares on the Uists the date of visit in 1993 most closely approximating the visit in 2000 was used for comparison. The change in wader numbers between the 1993 and the 2000 surveys was then used to estimate the change in the wader population on the Uists since 1993. One problem with the 2000 survey was that it was undertaken during daytime and not at dawn or dusk. This contrasts with the 1993 survey, and means that any declines in wader numbers, in particular Common Snipe, may be due to lower detectability associated with the time of day of survey (Green 1985, Reed *et al* 1985).

No surveys were made on Lewis/Harris so wader population changes here are unknown. The Lewis/Harris 1993 estimates are used for subsequent Scottish population estimates. Similarly, only a small sample of the 'identified wader sites' originally surveyed were revisited in 1997. Wader densities on many of the 'identified wader sites' proved not to be significantly higher than on random sites in 1992 (O'Brien and Bainbridge 2002). Those that were resurveyed in 1997 were sites that contained higher densities of breeding waders in 1992 than those that were not surveyed in 1997. Extrapolating the changes recorded on the identified wader sites to those not surveyed is not valid. Accordingly we have decided to use the numbers recorded on identified wader sites in 1992 as population estimates where there was no repeat survey in 1997. It should be noted that both the Lewis/Harris sites and the non resurveyed identified wader sites represent a small fraction of the total wader populations of Scotland, and so are unlikely to significantly affect the change in wader numbers recorded in the present study.

Analysis of data

The change in wader numbers was estimated using the following formula.

$$\text{Change} = (No_{yr2} - No_{yr1})/No_{yr1}$$

where No_{yr1} and No_{yr2} are the total number of waders for the given region in year one and year 2 respectively. These have been presented as percentages. A bootstrap method was used to estimate whether there was a significant change in numbers between the 2 surveys (see Appendix). In the bootstrap method sites were sampled, with replacement, until the set selected contained the same number of sites as had been surveyed. This was repeated 999 times and the sets ranked by the change in number of waders estimated. Note that this means that the 95% confidence intervals around the population estimate from the first years survey may overlap with the estimate from the second years survey but the percentage change may remain significant.

Results

Population estimates

The number of waders, the maximum number in a square, the number of squares with birds, the mean density and the estimated population sizes have been calculated for each of the survey areas (Table 1). Of the 2 Eurasian Curlew estimates presented 'Eurasian Curlew method 2' is the one that is likely to be closer to the true figure (Grant *et al* 2000).

The proportion of squares occupied on Scottish mainland indicated that Eurasian Oystercatcher and Eurasian Curlew were the most widespread of the wader species, each occurring in 59% of the squares surveyed (Table 1). Northern Lapwings occurred in 42% of squares and, although overall density was similar to Eurasian Oystercatchers, Northern Lapwings were recorded at higher densities than Eurasian Oystercatchers on those sites that were occupied. Common Snipe (20% of squares) and Common Redshank (10% of squares) were rather less widely distributed within Scottish farmed land.
The data from Table 1 have been combined to produce an overall estimate of wader numbers on farmed land in Scotland (Table 2). This indicated that Eurasian Oystercatcher and Northern Lapwing were the most common, and Common Redshank the least common of the 5 species of breeding wader on farmed land in Scotland.

Changes in wader numbers since 1992-93

A comparison of the changes in the number of breeding waders in sites surveyed in both 1992-93 and 1997-98 (2000 in the Uists) indicated considerable variation between the regions (Table 3). All 5 species declined significantly in Shetland between 1993 and 1998. By contrast, 4 of the 5 species (not Northern Lapwing) increased significantly in Orkney during the same period. On the Uists the Eurasian Oystercatcher population increased significantly, while the Common Snipe population declined significantly between 1993 and 2000, although the latter was likely to be due to the change in time of day of survey between 1993 and 2000. There were no significant changes in wader numbers on the random sites on mainland Scotland.

The data from Table 3 have been combined to produce an overall estimate of the change in wader numbers on farmed land in Scotland between 1992-93 and 1997-98-2000 (Table 4). There are no significant changes in any of the 5 species of breeding wader - although the 18% decline in Common Snipe and the 10% increase in Eurasian Oystercatcher and Eurasian Curlew estimates are very nearly significant. The confidence intervals around these estimates are, however, rather high indicating that the ability to detect national trends is rather poor. This is despite the fact that sample sizes are large (indicated by the fact that significant trends can be identified within the island groups). The data indicate clearly that trends in wader numbers

Table 1 *The number of breeding waders recorded in each of the survey areas within Scotland in 1997-98-2000. The population estimate is calculated by multiplying the mean density by the area of 'farmed land' within each region (shown in parentheses).*

Random sites on Scottish mainland	Eurasian Oystercatcher	Northern Lapwing	Common Snipe	Eurasian Curlew (method 1)	Eurasian Curlew (method 2)	Common Redshank
Calibrated no pairs	466	459.5	139.2	340	254.6	35.5
Maximum no in a square	16	28.5	9	9	11	6
Occupied squares (max=224)	132	94	45	132	132	22
Mean density (pairs km^{-2})	2.08	2.05	0.62	1.52	1.14	0.16
Estimate (area=34,177 km^2)	71,100	70,109	21,239	51,876	38,839	5,416
Lower confidence limit	56,793	51,212	13,643	44,037	32,773	2,621
Upper confidence limit	83,743	84,252	30.104	60,785	47,202	7,798
Key sites on Scottish mainland						
Calibrated no pairs	429	972.5	586.4	457	333.1	425
Maximum density (pair km^{-2})	35.0	49.0	52.4	32.9	24.3	20.7
Mean density (pairs km^{-2})	6.11	13.85	8.35	6.51	4.75	6.05
Orkney						
Calibrated no pairs	1321	588.5	544.6	687	527.6	251
Maximum no in a square	55	67	34.8	27	26.583	26
Occupied squares (max=65)	65	62	52	65	65	51
Mean density (pairs km^{-2})	20.32	9.05	8.38	10.57	8.12	3.86
Estimate (area=626km^2)	12,722	5,668	5,245	6,616	5,082	2,417
Lower confidence limit	11,497	4,434	4,164	5,874	4,425	1,830
Upper confidence limit	13,939	7,321	6,538	7,367	5,829	3,086
Shetland						
Calibrated no pairs	320	200	250.6	191	134.0	125.5
Maximum no in a square	22	21.5	17.4	8	5.993	12.5
Occupied squares (max=60)	59	55	47	58	58	45
Mean density (pairs km^{-2})	5.33	3.33	4.18	3.18	2.23	2.09
Estimate (area=398km^2)	2,123	1,327	1,662	1,267	889	832
Lower confidence limit	1,762	1,099	1,338	1,121	741	647
Upper confidence limit	2,545	1,600	2,025	1,419	1008	1,049
Uists						
Calibrated no pairs	745	1048	346	0	0	681
Mean density (pairs km^{-2})	14.90	20.96	6.9	0	0	13.62
Estimate (area=240km^2)	3,576	5,030	1,661	0	0	3,269
Lower confidence limit	3,093	4,230	1,247	0	0	2,696
Upper confidence limit	4,067	5,891	2,091	0	0	3,961

Table 2 ***Total population estimate for breeding waders on 'farmed land' in Scotland, 1997-98-2000.***

	Eurasian Oystercatcher	Northern Lapwing	Common Snipe	Eurasian Curlew (method 1)	Eurasian Curlew (method 2)	Common Redshank
Scottish Mainland Random	71,100	70,109	21,239	51,876	38,839	5,416
Surveyed key sites	429	973	586	457	333	425
Other key sites estimate	1,084	2343	1096	665	484	723
Uists	3,576	5,030	1,661	0	0	3,269
Lewis/Harris	68	1204	1488	0	0	349
Orkney	12,722	5,668	5,245	6,616	5,082	2,417
Shetland	2,123	1,327	1,662	1,267	889	832
Overall estimate	91,102	86,654	32,977	60,881	45,627	13,431
Lower confidence limit	76,822	67,774	25,439	53,114	39,432	10,442
Upper confidence limit	103,839	101,032	39,394	69,909	54,268	16,086

Note that the figures incorporated for the estimated key sites and Lewis/Harris assume that there has been no change in wader numbers on these sites since 1992/93.

vary considerably between island groups (Orkney v Shetland) and also that there is little consistency in trends in the dataset within Scottish mainland (indicated by the high confidence intervals within the Scottish mainland subset).

Discussion

Population estimates

Population estimates for breeding waders on 'farmed land' in Scotland have been presented. The estimate for breeding Eurasian Oystercatcher is an increase compared with 1992-93 and confirms that the range given in Stone *et al* (1997) (33,000 to 43,000 pairs in GB) is a considerable underestimate. This estimate means that the Eurasian Oystercatcher population breeding in Scotland is similar in size to that in the Netherlands and higher than any other country in Europe (Hagemeijer and Blair 1997). The Scottish 'farmed land' Northern Lapwing population now represents over half the UK total, with total numbers exceeded only by the Netherlands, Belarus, Germany and Sweden in Europe (Hagemeijer and Blair 1997). The new estimate of Eurasian Curlew numbers on Scottish 'farmed land' (45,600 pairs) again suggests that the figures given in Stone *et al* (1997) (33,000 to 38,000 pairs in GB) considerably underestimate the actual British Eurasian Curlew population which is likely to be closer to that indicated by Grant (1997). The Scottish 'farmed land' estimate for Eurasian Curlew is only exceeded within Europe by the population estimate for Finland (Hagemeijer and Blair 1997).

Estimated Common Snipe (33,000 pairs) and Common Redshank (13,400 pairs) populations each indicate that Scottish 'farmed land' holds a substantial proportion (54% and 40% respectively) of the UK's population of these species

Table 3 ***Changes in the number of breeding waders on each of the survey areas within 'farmed land' in Scotland between 1993 and 1998-99. All % changes marked in bold are significant at the 95% confidence intervals, the actual 95% confidence limits are shown in the Lower cl and Upper cl columns.***

Random sites (from 224 squares)	**No in 1992**	**No in 1997**	**% Change**	**Lower cl**	**Upper cl**
Eurasian Oystercatcher	428	466	8.88	-4.0	23.0
Northern Lapwing	503	460	-8.65	-28.1	12.9
Common Snipe	98	80	-18.37	-42.4	19.5
Eurasian Curlew	307	340	10.75	-3.1	26.7
Common Redshank	30	36	20.34	-33.3	123.3
Key sites					
Eurasian Oystercatcher	438	429	-1.94		
Northern Lapwing	1205	973	-19.29		
Common Snipe	343	337	-1.75		
Eurasian Curlew	429	457	6.65		
Common Redshank	518	425	-17.87		
Orkney (from 65 squares)					
Eurasian Oystercatcher	1027	1,321	**28.63**	18.1	40.9
Northern Lapwing	548	589	7.49	-10.7	25.3
Common Snipe	189	313	**65.61**	29.1	116.1
Eurasian Curlew	526	687	**30.61**	16.6	46.5
Common Redshank	175	251	**43.14**	5.3	90.0
Shetland (from 60 squares)					
Eurasian Oystercatcher	504	320	**-36.51**	-47.7	-23.2
Northern Lapwing	299	200	**-33.00**	-45.4	-15.9
Common Snipe	400	144	**-64.00**	-70.6	-56.0
Eurasian Curlew	310	191	**-38.39**	-47.3	-27.8
Common Redshank	165	126	**-23.94**	-44.0	-2.0
Uists (from 50 squares)					
Eurasian Oystercatcher	490	643	**31.22**	16.0	46.6
Northern Lapwing	1513	1,407	-7.01	-23.0	8.3
Common Snipe	231	117	**-49.35**	-64.8	-27.8
Eurasian Curlew	0	0		0.0	0.0
Common Redshank	841	953	13.32	-6.8	36.0

(Stone *et al* 1997). For 4 of the species of breeding wader a substantial proportion (>70%) of the total Scottish 'farmed land' population occurs on the Scottish mainland. In contrast, Common Redshank numbers on the Northern and Western Isles represent over half the total Scottish population.

Comparison with other estimates of breeding wader populations in Scotland

A previous paper (O'Brien 1996) compared wader densities, and population estimates, with those derived from Galbraith *et al* (1984). This suggested that Northern Lapwing estimates were similar, but that Common Redshank and Eurasian Oystercatcher estimates were 2 and 3 times higher, respectively, in 1992 than in 1983. The reasons for this apparent increase in numbers is unclear, but is just as likely to be due to differences in survey technique and interpretation associated with each survey as to actual increases in wader numbers. Galbraith *et al* (1984) did not estimate populations of Common Snipe or Eurasian Curlew, accepting that a significant proportion of the birds occurred on what they defined as uplands.

A survey of Northern Lapwings in Scotland was undertaken in 1998 (Wilson and Browne 1999). They estimated a Scottish Northern Lapwing population of around 65,000 pairs - some 75% of the estimate derived from the current survey. As their survey was based on a single visit around the end of April, the figure corresponds well with the findings from the present survey where the proportion of Northern Lapwings recorded on the first visit also represented around 75% of the total Northern Lapwing population estimate. There are 2 alternative explanations for this discrepancy. The first is that a single visit is insufficient and likely to underestimate Northern Lapwing numbers compared to the 3 visit method used in this survey. If this is the case then the estimate from the current study will be more accurate. The second is that a single visit is sufficient and that movements of birds between visits makes a 3 visit method likely to overestimate numbers. Other studies suggest that there is little movement of birds between sites on grassland habitats (Thompson *et al* 1994), but that movement may be more common where habitat rapidly becomes unsuitable during the breeding season (eg arable) or where densities are low relative to the area of suitable habitat (Mead *et al* 1968, O'Brien 2001).

Trends in breeding waders on 'farmed land' in Scotland in the 1990s

The present study had low ability to detect changes in national populations of waders breeding in Scotland during the 1990s because of considerable heterogeneity between the regions surveyed. For example, all 5 species declined significantly (from a 24% decline in Common Redshank to a 64% decline in Common Snipe numbers) on Shetland between 1993 and 1998. These were offset by a significant increase in numbers of 4 of the 5 species on Orkney where only Northern Lapwing did not increase significantly. On the Uists, Eurasian Oystercatcher numbers increased significantly between 1993 and 2000, while Common Snipe numbers declined significantly. However, the latter change is likely to be an artefact of differences between 1993 and 2000 in the time of day when surveys took place.

Comparison of results with the Breeding Bird Survey

The BTO/NCC/RSPB Breeding Bird Survey (BBS) monitors all bird species recorded on a random sample of sites in the UK on an annual basis since 1994 (Baillie *et al* 2001). For 3 of the species - Eurasian Oystercatcher, Eurasian

Curlew and Common Redshank -the 95% confidence intervals around the 2 estimates of change do not overlap (Tables 4 & 5 - all BBS squares). This would suggest that the 2 surveys have been sampled from different populations, although both purport to be estimates of changes of breeding wader numbers in Scotland in the 1990s. Differences between the surveys are:

- The present survey compares changes in wader numbers between 1992-93 and 1997-98-2000, although for 4 of the 5 species (not Common Redshank) 70-80% of the birds were recorded in 1992 and 1997 on the Scottish mainland. The BBS survey monitors wader numbers on an annual basis between 1994 and 1999. It is possible that wader populations increased between 1992 and 1994, then subsequently declined.

- The present survey covers only the 'farmed land' whilst BBS squares are randomly selected from all available squares in Scotland. A reanalysis of population changes on the subset of BBS squares on 'farmed land' in Scotland between 1994 and 1999 still showed significant Northern Lapwing declines, although the trends for Eurasian Curlew and Eurasian Oystercatchers were rendered nonsignificant (Table 5, David Noble *pers comm.*) Too few occupied squares meant that trend data for Common Snipe and Common Redshank on 'farmed land' was not reliable.

- The present survey estimates the number of breeding pairs while the BBS counts individual birds However, if the number of waders within an individual BBS transect section exceeds 10 then that has been judged to indicate a flock of non breeding birds and so is not included in the BBS estimate (Field and Gregory 1999). It is possible that an increasing population of breeding waders within individual transect sections could result in increasing numbers of these sections not being counted. There is no evidence that this has happened in the current BBS dataset.

- The timing and number of visits is different between the 2 surveys. The present survey aims to visit the site on 3 occasions, in late April, mid May and early June. The BBS visits on 2 occasions with the first visit sometimes as late as mid May. It is possible that early nesting waders, Lapwing in particular, are missed as they may already have failed and moved out prior to the first visit. This may underestimate the number of breeding Lapwing on a site in some years. There is, however, no evidence from the BBS data that mean date of first visit to the squares has become later. Also the total number of Lapwing recorded on the first visit to sites in the current survey was very similar to the number recorded on the second visit (220 of the random sites in mainland Scotland were visited on 3 occasions at the appropriate time of year. For all breeding waders more birds were recorded on the second visit than on the first). As the finishing date for the second visit in the present survey was later than the finishing date for the first visit on the BBS it would suggest that variation in Lapwing numbers within dates of the first visit should not be sufficient to skew the data significantly.

The conclusion of Wilson and Browne (1999) that "Scotland does not appear to have suffered from the widespread loss of breeding waders on lowland farms that has been encountered in England and Wales" is supported by the present study but not by BBS data. Conversely, their further conclusion that "... there is now good evidence of a decline in Northern Lapwing numbers in Scotland during the 1990s" is supported by the BBS data but not be the results from this study, although this study hints at a

Table 4 ***Overall changes in the numbers of breeding waders in Scotland between 1992-93 and 1997-98-2000. The lower and upper cls represent the 95% confidence limits around the percent change, as derived from the bootstrap statistic.***

	No. 1992/93	No. 1997/98	% Change	Lower cl	Upper cl
Eurasian Oystercatcher	82,851	91,102	9.96	-1.07	20.40
Northern Lapwing	94,160	86,653	-7.97	-24.80	5.03
Common Snipe	40,265	32,977	-18.10	-34.81	0.71
Eurasian Curlew	55,056	60,881	10.58	-1.08	23.74
Common Redshank	11,755	13,432	14.27	-10.91	40.74

Table 5 ***Population changes for all breeding waders in Scotland as recorded by the Breeding Bird Survey between 1994 and 1999 (Baillie* et al *2001).***

	All BBS squares in Scotland			BBS squares on 'farmed land' on Scottish mainland		
	Sample	%	Change	Sample	%	Change
Eurasian Oystercatcher	118	**-22**	**(-33 to - 9)**	83	-8	(-24 to +10)
Northern Lapwing	87	**-34**	**(-46 to -20)**	64	**-35**	**(-49 to -17)**
Common Snipe	55	39	(0 to +95)	20	**+20**	**(+16 to +275)**
Eurasian Curlew	125	**-18**	**(-31 to - 4)**	81	-15	(-32 to + 5)
Common Redshank	21	**-61**	**(-75 to -39)**	9	**-74**	**(-84 to -57)**

Note that the changes on farmed land were calculated by David Noble at BTO and have not previously been published. The percentage changes are shown with 95% confidence intervals in brackets. Figures in bold are significant at the 5% level.

decline in Northern Lapwings (-8%). It is of considerable concern that short term breeding wader population trends suggested by this study and the BBS differ so markedly. The explanation may simply be that wader population trends within Scotland are heterogenous across habitat and geographical regions. This is implied by the wide confidence intervals around the change estimates and demonstrated by the contrasting trends between Orkney and Shetland in this study, and strong trend differences within the Uists as revealed in another recent study (Jackson *et al* in press).

Appendix

Sites were randomly selected, with replication, from the dataset in such a way that some sites could be selected on more than one occasion, while others would not be selected. This was repeated until a pseudo dataset, comprising the same number of sites as the original dataset, was selected. Note that, in contrast to other change methods such as Baillie *et al* 2001, this approach

allows sampling of sites where a given wader species was not recorded. The pseudo estimates for wader numbers in each of the 2 years of survey were then summed, the change statistic calculated and stored. This process was repeated 999 times, sorted by change, and the measure for change at the 25th and 975th estimate used as the lower and upper confidence intervals respectively. This process was repeated separately for each of the regions where sites were randomly sampled. This analysis estimates the change in number of breeding waders within each of the regions. An overall estimate of change in wader numbers for Scottish farmland needs to be weighted by the proportion of the wader population that occurs in each of these regions. Accordingly wader population estimates for a region, and the confidence intervals around these estimates, were calculated using the following formula.

$Popn^{Ryr} = Count^{act} + (count^{est}/No.Squares) * (Area^{est} - Area^{obs})$

Where:

$Popn^{Ryr}$ is the population estimate for a region and a given year

$Count^{act}$ is the number of waders recorded on all the surveyed squares in the year

$Count^{est}$ is the number of waders estimated by bootstrapping

$Area^{obs}$ is the area (number of 1km squares) surveyed

$Area^{est}$ is the area from which the 1km squares were sampled.

For the population estimate $Count^{act}$ and $count^{est}$ are the same - the number of waders recorded on the squares in the year. The confidence intervals are estimated by substituting $count^{est}$ with the figure derived from bootstrapping. Population estimates are obtained for each of the regions and each of the years and for each of the 999 bootstrapped estimates. The bootstrapped estimates for each year are summed across the regions for each of the 999 estimates, ensuring that the bootstrapped estimates have not been sorted beforehand. The key sites survey is a complete survey and so is added to each of the 999 estimates. These provide 999 estimates of total wader populations for each of the two survey periods. The change statistic was calculated for each of these estimates and sorted by change, taking the 25th and 975th estimate as the 95% confidence limits as before.

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The Atlantic Puffin population of the Shiant Islands, 2000

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The Atlantic Puffin population of the Shiant Islands, one of the very largest in the United Kingdom, was estimated to be about 65,200 pairs in 2000. Although this total is below the 76,900 pairs recorded in 1970 during Operation Seafarer, the most accessible colonies have not altered in numbers in the 30 year period, and we do not believe the total population has declined. We describe the location of a new permanent transect which will permit future monitoring of the population.

Introduction

One of Britain's largest Atlantic Puffin *Fratercula arctica* colonies, probably the largest after St Kilda, is that on the Shiant Islands in the Minch (Lloyd *et al* 1991). In the course of Operation Seafarer the colony was censussed in 1970 when the population was estimated at 77,000 pairs. A repeat census in 1971 suggested 20% fewer pairs (Brooke 1972). There was at least a prima facie case that these numbers were considerably less than the number occupying the islands in the late nineteenth century. Coupled with evidence of decline from other major colonies (e g St Kilda: Flegg 1972), a geographically extensive study of Scottish Puffins was established under the leadership of Dr M P Harris. Broadly, this study ran from the mid 1970s to the mid 1980s and discovered that, while some colonies might have declined in the past, the decline was not continuing. Other colonies (eg Isle of May) were actually increasing (Harris 1984). Although the Shiants colony was not studied in great detail during this project, the number of burrows in monitoring transects was counted annually, and found to fluctuate, but not to show any marked trend (Harris 1984).

This paper brings the Shiants situation up to date. It repeats the censuses of 1970/71 using the same methodology and same observer, compares the counts so obtained with those arising from other methods, and revisits the monitoring transects. Since these transects had become very difficult to find on the ground, we established a new marked transect which, we hope, will be easy to find and to count for several decades.

Methods

In the course of the nationwide seabird census, Seabird 2000, we visited the Shiants from 17-24 June 2000.

Colony census methods

The census unit was the apparently occupied burrow, recognized by features such as disturbed grass, fresh excavation, droppings, hatched eggshells or dropped fish (Harris 1984). To estimate the number of apparently occupied burrows in the Atlantic Puffin colonies, A-L, mapped by Brooke (1972), we repeated his census methodology. In brief these methods were:

(i) Make several transects walking up the fall line of the colony, counting the number of burrows one pace either side of the transect. Estimate the colony's width from several paced horizontal transects. To ensure uniformity of pace size, the transects and width estimates should be done by the same person, MdeLB in this case.

(ii) Over a timed period, count simultaneously the number of Puffins departing from burrows in the colony to be censussed and also from burrows in a colony already counted by Method (i). The ratio of departing Puffins allows a straightforward estimate of the number of burrows in the unknown colony. The method is impractical for colonies larger than about 5000 burrows.

(iii) Simultaneously count the number of Puffins standing in the unknown colony and in a colony already counted by Method (i). The ratio of standing Puffins allows a straightforward estimate of the number of burrows in the unknown colony. This method is most useful for boulder scree colonies.

(iv) Make a guess based on the extent of the colony, the burrow density, and the number of Puffins active there.

As an independent alternative to the above methods, we also used the following methods in 2000.

(A) In colonies A and G, we counted the number of apparently occupied burrows in 20 randomly situated 5 x 5 m quadrats, and assessed the area of the colony via detailed tape measure/compass mapping of the perimeter.

(B) Over half an hour, we simultaneously counted the number of Puffins arriving with fish at burrows in the Colony C and also at burrows in Colony A already counted by Methods (i) and (A). The ratio of arriving Puffins arriving at the 2 colonies allows a straightforward estimate of the number of burrows in the Colony C. This method is simply a variation on Method (ii) above.

(C) In Colony C, on very steep slope requiring a rope for safe access, we counted the number of burrows in a single transect of 1.52 m width along the fall line in the centre of the colony. We also measured the colony's width at the cliff top.

Permanent transects

Having refound the permanent transects monitored by Harris (1984) in colony G on Garbh Eilean, we counted the number of apparently occupied and unoccupied burrows therein. In practise these transects, comprising 3 x 3 m quadrats, occupied a single strip 144 x 6m down the centre of colony G, plus 3 horizontal 3m strips of length 66, 44, and 86 m intersecting the single vertical strip at right angles. In each case, these horizontal lengths include the 6 m overlap with the vertical transect. The 3 horizontal transects were situated approximately one quarter, midway and three quarters down the colony, and they spanned the entire width of the colony.

Our newly established permanent transect depends only on one permanent FENO marker, situated centrally at the top of colony G (Fig. 1). Its GPS determined position is 57°54'08"N 6°21'37"W and its altitude 63m. From this marker, the transect line runs due north (magnetic) until the bottom of the colony is reached. The vertical counted transect is 50 3 x 3 m quadrats stretching to the bottom of the colony. The western edge of each quadrat touches the vertical line. The horizontal transect is perpendicular to this transect line. It is 15 3 x 3 m quadrats long. It intersects the vertical transect such that Quadrat 27 on the vertical transect (counted from the top) is the same as Quadrat 10 on the horizontal transect (counted from the east).

In all the above surveys, any burrows whose entrance was crossed by the quadrat boundary were scored as a half burrow.

Results

The results of the colony by colony census are given in Table 1. The overall pattern of Atlantic Puffin distribution was clearly broadly similar in 1970 and 2000. Two marginal colonies on Eilean Mhuire (D and E) had disappeared. The large colonies that were most difficult to count, C on a steep slope on Eilean Mhuire and F and H among boulders on Garbh Eilean yielded somewhat smaller estimates in 2000 than 30 years earlier. On the other hand, the most tractable colonies, A and G (i) which are both on large easily reached grassy slopes on Eilean Mhuire and Garbh Eilean respectively, showed modest increases. However, given the large standard errors, these increases were not significant. But we are encouraged to believe in the accuracy of these estimates by the correspondence between the simple Method (i) and the more thorough Method A.

The permanent transect data also suggested an increase in Colony G (i). In 2000, the number of burrows counted in the Harris transects was 871 occupied and 238.5 unoccupied, equivalent to densities of 0.623 and 0.171 burrows/m^2 respectively. This number of occupied burrows is higher than in 1973-1983 (see Discussion).

The mean number of burrows in the 64 quadrats of the newly established transect was 8.17 + s.e. 0.49 occupied and 2.38 + 0.18 unoccupied/quadrat. Thus the total number of burrows was 519 occupied and 152 unoccupied, equivalent to densities of 0.901 and 0.264 burrows/m^2 respectively. The lower overall density in the Harris transects is probably mostly explicable by the fact that their horizontal arms extended laterally further than the new transect, into areas barely occupied by Puffins.

Discussion

The number of occupied burrows counted annually from 1973 to 1983 in the Harris transects was notably stable, ranging from about 450-650 but usually about 550 (Harris 1984: Fig 12). The number of unoccupied burrows was about 400 in most years (D Steventon, in litt.). Our 2000 counts revealed a substantial increase to 871 occupied burrows while the number of unoccupied burrows fell to 239. Even allowing for differences between observers in the assignation of burrows to the occupied and unoccupied categories, it seems numbers of burrows and more particularly of occupied burrows have increased in the transects. This is entirely compatible with an increase of approximately 11% in the overall size of Colony G (i) between 1970 and 2000 (Table 1).

Other Atlantic Puffin colonies of the Shiants had either increased or decreased. The likely error in such one off counts is substantial and therefore we suspect that the apparent change in overall numbers from 76,900 pairs in 1970 to 65,200 in 2000 is well within counting error and that the population has changed little in the 30-year period.

Populations of the other abundant auks of the Shiants have approximately doubled in size in this period. Common Guillemots *Uria aalge* increased from 7970 individuals in 1970 to 15,171 in 2000 while Razorbills *Alca torda* increased from 3535 to 8046 (Brooke 1973, Seabird 2000 data). The number of predatory Great Black-backed Gulls *Larus marinus* has also increased, from 197 nests in 1970 to 310 in 2000 (Brooke 1973, Seabird 2000 data). Black Rats *Rattus rattus* remain on the islands, and stable isotope analysis indicates the coastal dwelling rats do prey upon seabirds, but it is debatable whether their presence depresses these particular seabird populations (Stapp 2002). These observations broadly suggest that

Table 1 ***Estimates of number of occupied burrows in Shiant Puffin colonies. See Brooke (1972) for precise locations of colonies. A-E are on Eilean Mhuire, F-J on Garbh Eilean, K on Galta Beag, and L on Galta Mor. Standard errors are given for 2000 counts using transect or quadrat methods. The censuses by other methods were undertaken once only in the stated colonies and no error estimate is given.***

Colony	Census method	1970 count	2000 count ± se
A	(i)	3600	4020 ± 429
	(A)	-	4020[1] ± 530
B	(i)	200	36 ± 24
C	(ii)	10,100	8950
	(iii)	-	4300
	(B)	-	3280
	(C)	-	6040
D (i)	(i)	420	No longer present
(ii)	(i)	670	No longer present
E	(i)	80	No longer present
F	(iii)	43,000	37,900[3]
G (i)	(i)	4050	4220 ± 825
	(A)	-	4850[2] ± 800
(ii)	(i)	2860	2640 ± 322
H	(iii)	9000	3620[3]
I	(i)	710	376 ± 113
J	(iv)	200	200
K	(iv)	1000	3500
L	(iv)	1000	2700
	Totals	76,900	65,200[4]

1.Based on mapped area of 6637m^2
2.Based on mapped area of 7094m^2
3.Comparing the number of Puffins standing in this colony with the numbers in G(i) and G(ii)
4.For calculating this total, the mean estimate was used for those colonies counted by more than one method.

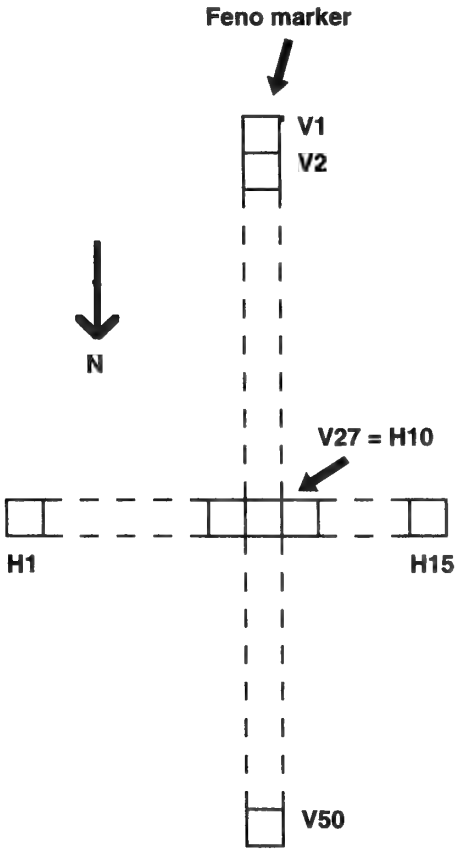

Figure 1 *A schematic sketch showing the arrangement of the new permanent 3 x 3 m quadrats established in Puffin colony G on the northern slope of Garbh Eilean. There are 50 'vertical' (V) and 15 horizontal (H) quadrats, with one quadrat shared where the 2 transect lines intersect (V 27 = H10).*

conditions for auks breeding on the Shiants have not deteriorated since 1970. They therefore accord with our census data suggesting little overall change in the major Atlantic Puffin colony on the Shiants and give us no reason to question Harris's (1984) optimism 'about the Puffin's future and the general state of Puffindom'.

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Scavenging by birds upon Salmon carcasses during the spawning season

R HEWSON

Scavenging of Salmon by birds on the river Dee in north east Scotland was studied during 6 spawning seasons. Spawning took place mainly between early November and the end of January. Otters brought ashore, usually at selected landing places, carcasses of Salmon which they had killed or which had died after spawning. Other carcasses were deposited by changes in water level. Birds scavenged 21% to 49% of carcasses but rarely completely. Great Black-backed Gull was the main avian scavenger, followed by Grey Heron and Carrion Crow. During the spawning season Great Black-backed Gulls flew along the river at treetop height searching for carcasses, the number of such flights being related to the number of carcasses. Carrion Crows were dependent upon other scavengers to open up carcasses and in many cases simply removed eyes from them.

Introduction

On the River Dee in north east Scotland Otters *Lutra lutra* obtain much of their food from November through January by predation on spawning Salmon *Salmo salar* and scavenging the carcasses of those dying after spawning (Carss *et al.* 1990, Hewson 1995). This leads to a substantial amount of fish carrion being left on the river bank which becomes available to avian scavengers.

The present study considers the amounts of Salmon carrion available to scavenging birds and the use made of it.

Study Area

The study area, in the middle reaches of the river, comprised 7.5 km of the south bank of the Dee between Banchory and Aboyne. The river was up to 70 m wide, fast flowing, with pools in which Salmon lie during the summer. The Burn of Cattie, a tributary stream used by spawning Salmon, entered the Dee towards the upstream end of the study area. Fish which had spawned there between early November and the end of January made their way back to the river. Many died there or were taken by Otters which foraged regularly in the study area feeding largely on Salmon during the spawning season. (Hewson 1995).

In areas used by fishermen the banks were kept clear of tall vegetation. Elsewhere, commercially planted conifers extended along three-quarters of the study area with alder *Alnus glutinosa* and birch *Betula* sp. or gorse *Ulex europaeus* growing at the water's edge. The study area, used in the spawning seasons of 1992-93 and 1994-95 to 1996-97, formed part of a larger area used for an earlier study of scavenging of Salmon carcasses in 1990-92 (Hewson 1995).

Methods

Salmon carcasses on the river bank were counted weekly from early November to late January in 1990-91 to 1996-97 with the exception of 1993-94. Carcasses were measured from the snout to the tail fork, weighed, and any damage was described. Predator and/or scavenger species were ascribed to a carcass where there was

diagnostic damage or tracks or signs were found or the feeding animal seen.

Scavenging by birds could be readily distinguished from scavenging by mammals. The removal of eyes and the making of small pits in the flesh could be identified as the work of crows but it was not possible to differentiate the large tears made by Great Black-backed Gulls from those made by Grey Herons. Scavenging by birds usually followed breaking of the carcass by otters, but both Great Black-backed Gulls and herons *Ardea cinerea* were capable of breaking into Salmon carcasses and were occasionally seen to do so.

Results

Availability of Salmon carrion

Salmon carcasses first appeared upon the river bank in early November. A majority of those found throughout November, December and January had been put there by Otters.

The median length of Salmon carcasses appearing on the river bank in 1990-91 was 76 cm and in the next year 78 cm; the median weight for both years was 3.2 kg. Of this 2.6 kg was available to scavengers, the inedible remainder comprised skeleton, gills, fins etc. (Hewson 1995). The greatest weight of carrion occurred in mid December (Table 1). The annual amount was always large, between 15.6 kg and 36.7 kg per kilometre of bank from December onwards, with a corresponding amount on the opposite bank. It was under used by vertebrate scavengers.

Scavenging of Salmon carcasses by birds

In many cases scavenging by birds was restricted to the removal of the upper eye (both eyes if they could be reached) from Salmon carcasses. Less than half were further scavenged (Table 2). There was a sharp falling off in the extent of further scavenging between the 2 years 1992-93 and 1994-5 and the following 2 years (X^2 = 4.86, $P<0.05$). Similarly Great Black-backed Gulls, the main scavenger of Salmon carcasses, appeared at 33.3 per cent of carcasses in 1992-93, 53.1 per cent in 1994-95 but only 5.7 per cent in 1995-96 and 4.7 per cent in 1996-97 (Table 3)

Birds seen at Salmon carcasses gave the best indicators of avian scavenging because damage by birds could not usually be attributed to particular species unless there were tracks or feathers at the carcass. Great Black-backed Gulls sometimes characteristically everted the skins of small Salmon carcasses in the same way as they do with lambs (Hewson 1984).

Great Black-backed Gulls flew at tree top height along the river in search of Salmon carcasses. If they found one they circled over it, or flew past and came back or landed and waited for a time before going to the carcass. Such flights (Table 4) were correlated with the number of carcasses 2 x 10 day periods earlier, (Spearman rank correlation coefficient r_s = 1.00, $P<0.01$), reflecting an accumulation of carrion lying on the bank.

Discussion

There was no obvious explanation for the falling off in scavenging by birds between 1994-95 and 1995-96. All the birds concerned were wary of human disturbance and may have been affected by forestry or agricultural operations. Even when the extent of scavenging was highest less than half the Salmon carcasses on the river bank

were scavenged beyond the removal of eyes. The small amounts of carrion usually eaten by birds were difficult to measure and few carcasses were wholly scavenged by birds.

Only Great Black-backed Gulls, which scavenge at fishing boats (Beaman 1978, Buckley 1990) and ewe and lamb carcasses (Hewson 1984) were influenced by the number of Salmon carcasses available. The patrolling flights along the river resembled similar flights by Great Black-backed Gulls over areas where sheep were lambing in search of ewe or lamb carcasses, couped ewes or ewes having protracted labour when the protruding lamb might be attacked (Hewson 1984).

There were about half as many Great Black-backed Gulls and fewer Salmon carcasses on a stretch of the Dee 21 km upstream of the present study area (Hewson 1995). The earlier studies of Marquiss (Appendix) showed that most avian scavenging was done by adult gulls.

In summer Great Black-backed Gulls feed on surface shoaling sand eels *Ammodytes* spp and fish offal (Beaman 1978) or fish and auks *Alcidae* (Buckley 1990).

Besides feeding on carrion herons foraged along the river and tributary streams and elsewhere for small salmonids, amphibians and small mammals. They were often seen at fishing stances in the study area.

Crows were opportunist scavengers, subordinate to herons and Great Black-backed Gulls. Houston (1978) considers that the removal of eyes from lamb carcasses by crows is a form of predatory attack as the eye socket may be penetrated causing damage to the brain. However eyes and tongues are the easiest source of food. Crows removed the upper eye from a sheep carcass within one hour of it being made available and the tongue 2 hours later; they did not feed from the carcass during the following three days (Hewson 1981a). Crows were not seen to hoard carrion (Hewson 1981b) from Salmon carcasses perhaps because it was difficult to collect compared with sheep or Rabbit carrion but probably because observations were too brief as crows are wary and easily disturbed.

Breaking of Salmon carcasses by Otters made them available to scavenging birds in the same way as the breaking of sheep carcasses by Foxes. (Hewson 1981a).

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Appendix (data from M Marquiss)

Great Black-backed Gulls along the Dee

Weekly counts of Great Black-backed Gulls along the Dee throughout the year showed peak numbers in November but extending into February on a 9.5 km section of the Dee a few km downstream of the study area. The counts, during the first 3 hours of daylight to minimise the risk of disturbance by anglers and others, were carried out on 2 sections of the Dee, and on the North Esk about 40 km south, a river also used by spawning Salmon.

On an 11 km section of the Dee upstream of the study area there were half as many Great Black-backed Gulls throughout the year as in the downstream section and peak numbers occurred earlier, in October-December. On both sections of the Dee there were few Great Black-backed Gulls between April and September.

Table 1 *Seasonal changes in the number of Salmon carcasses arriving on the bank of the River Dee and their weight, 1990-91 to 1996-97.*

	November		December		January
	21 - 30	1 - 10	11 - 20	21 - 30	31 - 9
Number of carcasses	7	47	67	44	34
Weight (kg)	21	198	275	134	117

Table 2 *The extent of scavenging by birds on Salmon carcasses on a 7.5 km stretch of the River Dee.*

	Carcasses	Scavenged by birds		%
	on bank	Eye only	further scavenged	further scavenged
1992/93	39	16	19	48.7
1994/95	32	11	11	34.4
1995/96	53	12	12	22.6
1996/97	43	9	9	20.9

Table 3 *Birds at carcasses on river bank, observations to 31 January.*

	Visits	Carcasses	Great black-backed gull	Heron	Crow
1992/93	24	39	13	8	4
1994/95	18	32	17	1	10
1995/96	11	53	3	1	0
1996/97	12	43	2	2	4

Table 4 *Patrolling flights by Great Black-backed Gulls in relation to the number of Salmon carcasses during 5 spawning seasons (no data for 1990/91).*

	November		December			January	
	21 - 30	1 - 10	11 - 20	21 - 30	31 - 9	10 - 19	20 - 31
Carcasses	5	46	64	44	34	24	22
Flights	2	3	8	17	32	15	16

The North Esk showed a similar pattern with peaks in Great Black-backed Gulls in October and November. The proportion of immature gulls in their first and second years on the 2 rivers combined increased steadily from 7% in October to 100% in May and then declined steeply; most of the avian scavenging of Salmon carcasses was done by adult Great Black-backed Gulls.

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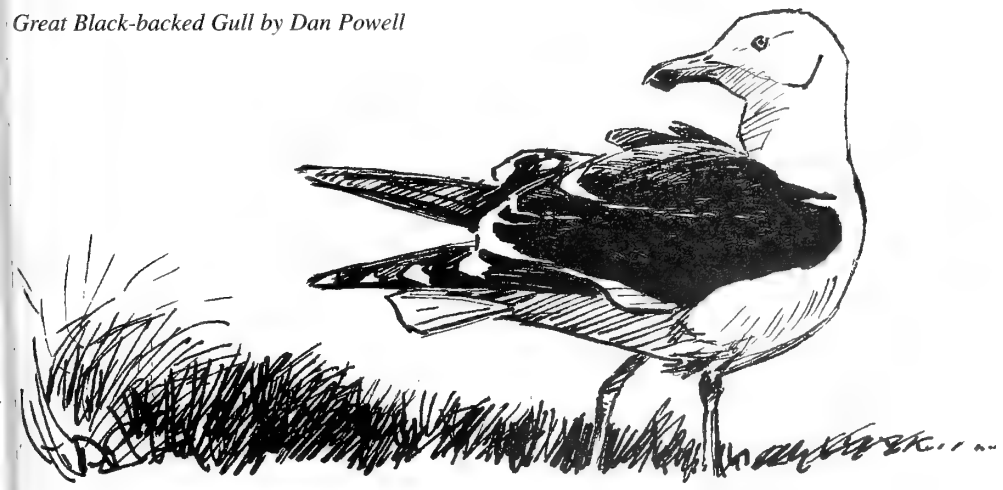
Great Black-backed Gull by Dan Powell



Numbers of Siskins in relation to the size of the Scots Pine cone crop

H McGHIE

The sizes of conifer cone crops vary greatly between years and the numbers of finches dependent on such crops respond accordingly. Most studies have been concerned with changes in populations of crossbills, whilst Siskins have received relatively little attention. In the present paper, I analyse Nethersole-Thompson's (1975) data series for Siskin in relation to the size of the Scots Pine cone crop size and numbers of crossbills.

Methods

Nethersole-Thompson (1975) made estimates of the abundance of Siskins on a 4 point scale in 21 years between 1934 and 1967 (1934–42, 1946–54, 1958, 1962 and 1967), in upper Strathspey. He also made estimates of the abundance of crossbills on a 6 point scale in the same area between 1924–74. These were identified as Scottish Crossbill *Loxia scotica*, but may have included Common Crossbill *Loxia curvirostra* and Parrot Crossbill *Loxia pytyopsittacus*, as these species are known to be present in the area and identification is problematical (Summers 2002). Nethersole-Thompson (1975) also provides an assessment of the size of the Scots Pine *Pinus sylvestris* cone crop in upper Strathspey, made by 2 foresters.

Statistical methods were the same as those used by Summers (1999). Nethersole-Thompson's (1975) data for Siskin, crossbills, and cone crop size were analyzed by splitting both bird and cone data into 2 groups according to their abundances, so that there were approximately equal numbers of observations in the high and low abundance categories. Contingency tables were then constructed to compare bird and cone crop abundances and, secondly, to compare changes in the abundances of birds or the size of the cone crop between consecutive years. Where there was no difference between years, data were included with the 'decrease' category. Interactions between numbers of Siskins, numbers of crossbills and the sizes of the cone crop were tested using Fisher's exact test (2 tailed).

Results

There was a significant positive association between the abundance of Siskins and the size of the Scots Pine cone crop in Strathspey (Table 1). There was a stronger positive association between changes in the numbers of Siskins and changes in the cone crop. There were also strong positive associations between the abundances of Siskins and crossbills, and changes in the abundances of these birds (Table 2). In 3 of the 4 years when Siskin abundance was high but the cone crop was small, the abundance of crossbills was also high (1936, 1942 and 1952). Both Siskins and crossbills increased between 1954–58, although the cone crop remained the same. These similarities suggest that there is a common explanation for these divergences from a direct relationship between bird abundance and cone crop size.

Most instances of divergences from a direct relationship between the size of the cone crop and the abundance of Siskins were where there were high numbers of birds in relation to the size

Table 1 ***Associations between abundance and changes in abundance of Siskins and cones of Scots Pine on upper Strathspey 1934-67.***

Cone crop size[1]	Siskin abundance[1]	
	Low-fair	**High-peak**
Poor-fair	34[2], 35, 37, 39, 41, 47, 48, 50, 51, 53, 54, 67	38, 46, 58, 62
Bumper	40	36, 42, 49, 52

Fisher's exact test, 2 tailed, P=0.047

Change in cone crop	Change in Siskin abundance	
	Decrease or same	**Increase**
Decrease or same	36-37, 38-39, 40-41, 42-46, 46-47, 49-50, 52-53, 58-62, 62-67	54-58
Increase	39-40, 50-51, 53-54	34-35, 35-36, 37-38, 41-42, 47-48, 48-49, 51-52

Fisher's exact test, 2 tailed, P=0.010

1. Data from Nethersole-Thompson 1975. 2. Numbers are years, eg 35=1935, 35-36=1935-1936

Table 2 ***Associations between abundance and changes in abundance of Siskins and Scottish Crossbills on upper Strathspey 1934-67.***

Crossbill abundance[1]	Siskin abundance[1]	
	Low-fair	**High-peak**
Very low-fair	34[2], 37, 39, 40, 41, 47, 48, 50, 51, 53, 54, 67	62
High-peak	35	36, 38, 42, 46, 49, 52, 58

Fisher's exact test, 2 tailed, P<0.001

Change in crossbill abundance	Change in Siskin abundance	
	Decrease or same	**Increase**
Decrease or same	36-37, 38-39, 39-40, 40-41, 42-46, 46-47, 49-50, 52-53, 58-62, 62-67	
Increase	50-51, 53-54	34-35, 35-36, 37-38, 41-42, 47-48, 48-49, 51-52, 54-58

Fisher's exact test, 2 tailed, P<0.001

1. Data from Nethersole-Thompson 1975. 2. Numbers are years, eg 35=1935, 35-36=1935-1936

of the cone crop. The opposite situation applied when considering changes in abundance: most instances of changes in the abundances of Siskins and cones diverging from a direct relationship were where cones increased but Siskins did not. These 2 observations, taken together, perhaps indicate that there was a time lag between changes in cone crop and the size of the Siskin population adjusting to increases and decreases in the food supply. The same situation applied to crossbills in that most instances of changes in numbers of birds and cones diverging from a direct relationship were where cones increased but birds did not. There were the same number of instances of crossbills and cones diverging from a direct relationship in either direction in terms of abundance however (see Summers 1999).

Discussion

Siskins have slender bills which are mainly used like tweezers to extract seeds from cones and seedheads. They feed mainly on birch *Betula* and Alder *Alnus glutinosus* in winter, and conifers through much of the breeding season. These are supplemented by a wide variety of other plant seeds subject to availability, especially those of the *Asteraceae* and docks *Rumex* (MacDonald 1968, Newton 1972). They cannot open unripe pine cones, but feed on pine cones which have been partly opened by crossbills or by dry weather in spring (Nethersole-Thompson 1975, Staines *et al* 1987, Shaw 1990).

The present study confirms Nethersole-Thompson's assertion that there was a relationship between the abundance of Siskins and the size of the Scots Pine cone crop on upper Strathspey. This is in keeping with Summer's (1999) finding for crossbills in the same area, but differs from the situation in Finland, where the numbers of Siskins and Common Crossbills were related to changes in the size of the Norway Spruce *Picea abies* cone crop but not to that of Scots Pine (Haapanen 1966, Reinikainen 1937, Summers 1999). Norway Spruce constitutes the main food of Siskins in Finland (Haapanen 1966, Newton 1972). Shaw (1990) found the greatest numbers of Siskins in years of large cone crops of Sitka Spruce *Picea sitchensis*, the dominant tree species, in Glentrool Forest between 1983–88.

Summers (1999) found that there was a stronger relationship between changes in abundance of crossbills and the cone crop than between abundance of these, and considered this to be due either to inaccurate recording or from a time lag between changes in cone crop and abundance of birds. As this pattern was also found for Siskins, it is perhaps unlikely that inaccuracies would be found for both species in the same years. Factors which will influence the numbers of Siskins which settle in an area will include the numbers of birds searching for food and the availability of food in surrounding areas (see Summers 1999). The availability of Scots Pine seeds to Siskins will depend more on the weather than it will for crossbills, as they rely on dry weather to open pine cones. From the present study, it is clear that Siskins and crossbills respond to changes in the Scots Pine cone crop in broadly the same way.

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Are reintroduced White-tailed Eagles in competition with Golden Eagles?

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Since the White-tailed Eagle was reintroduced into Scotland in 1975, it has been predicted that inter-specific competition for food would displace the Golden Eagle from many coastal ranges. We examined the effects of White-tailed Eagle activity on the breeding performance of Golden Eagle ranges on Mull, where both species occur at relatively high density for Scotland. There was no consistent effect of White-tailed Eagle on Golden Eagle productivity or range occupancy. Only a single and temporary example of occupation of a Golden Eagle nest site by White-tailed Eagles was recorded. While the results may be premature and suffered from low sample sizes, they suggest that Golden Eagles may not be displaced from all ranges that historically were occupied by White-tailed Eagles. We put forward several arguments that cast doubt on previous studies' suggestions that inter-specific competition for food is important and that historical changes in the 2 species' distribution in Scotland were the result of competition. We tentatively suggest that the 2 species can co exist in western Scotland, although continued monitoring and further studies of competition are recommended.

Introduction

Numbers of White-tailed Eagles *Haliaeetus albicilla* have been slowly increasing in western Scotland since their reintroduction started in 1975 (Love 1983, Green *et al* 1996); in 2000 there were 19 breeding pairs in Scotland (22 pairs apparently holding territory) (Evans *et al* in press). It has been suggested that the continued spread of the White-tailed Eagle in Scotland will lead to the displacement of Golden Eagles *Aquila chrysaetos* through competitive effects as coastal ranges are reclaimed (Thom 1986, Watson *et al* 1992, Watson 1997, Halley and Gjershaug 1998, Halley 1998).

The White-tailed Eagle is globally 'near threatened' (Collar *et al* 1994), but both eagle species are treated as vulnerable under European conservation law (Tucker and Heath 1994) and are afforded the highest level of legal protection in the UK. It is important to understand the nature of any inter-specific competition so that, as White-tailed Eagle numbers increase, deleterious effects on the Golden Eagle population may be minimised.

In this paper we attempt to answer 2 questions: is there evidence of competition between the 2 species in western Scotland, and are there any indications of how they may compete? The island of Mull has the highest density of White-tailed Eagles and one of the highest densities of Golden Eagles in Scotland. We use long term data on breeding success and range occupancy of Golden Eagles on Mull to look for spatial patterns in Golden Eagle productivity and for temporal declines in Golden Eagle productivity and range occupation in association with the settlement and use of Golden Eagle ranges by White-tailed Eagles. As both species are long lived and competitive effects may take many years to become obvious, it is possible that,

even if competition does occur, it may not be detected by this study. Hence, our study may be premature. But if competition does not take many years to become obvious, our study may help by identifying its form and allow mitigating management to be started while the White-tailed Eagle population is still in an early phase of expansion. We also feel that it is important to report on this issue, given IUCN (1998) calls for the monitoring of reintroduction projects and Fischer and Lindenmayer's (2000) criticism of the lack of communication from reintroduction projects on outcomes.

Methods

Fieldwork was conducted on the island of Mull, where both species of eagle bred until White-tailed Eagles became extinct in the 1860s (Harvie-Brown and Buckley 1892). Golden Eagles continued to breed on Mull in spite of persecution (Gordon 1920) and White-tailed Eagles bred again on the island in 1983, following reintroduction to Rum (Love 1983).

Golden Eagles use and defend a group of nest sites and a surrounding area used for hunting, all of which is known as a home range or territory (Watson 1997). Field methods to determine the range occupation and productivity of Golden Eagles were the same as 2 national surveys of Golden Eagles in Britain (Dennis *et al* 1984, Green 1996) and involved several visits per year to all known home ranges of Golden Eagles and potential nesting areas. Data were collected on range occupancy, breeding status, breeding success and the number of young fledged each year. Some ranges were visited from 1954 onwards, but complete coverage of all ranges was not attempted until 1981 and so our analyses used data from 1981 to 1999.

Following Green (1996) a range was classed as occupied if a pair of Golden Eagles were seen together in spring or if there was evidence of breeding activity (eg a built up nest). We considered a range as unoccupied if a pair was not seen during a visit and there was no sign of breeding activity and as abandoned if it was unoccupied over a 3 year period. We excluded cases where it was known or suspected that eggs had been stolen.

All observations of White-tailed Eagles and the location and fate of breeding attempts were recorded (see also Green *et al* 1996) and assigned to a Golden Eagle home range (McGrady *et al* 2002). Because observer effort per Golden Eagle home range varied both between ranges and between years, it was not possible to assign White-tailed Eagle activity scores on the basis of a wholly objective measure, such as the number of sightings of White-tailed Eagle per Golden Eagle home range per year. Instead, for each year since 1981, we classed the presence and activity of White-tailed Eagles within each Golden Eagle range to one of 5 ordered categories: 0 = no known activity, 1 = rare observations of use, 2 = occasional observations of use, 3 = frequent and regular observations of use, 4 = breeding pair. The simple classification allowed informed estimates to be made of activity by both breeding and non breeding White-tailed Eagles in each year, but assumed that the impact of breeding birds was higher than that of non breeders.

We looked for evidence of competitive effects both spatially and temporally. For our analysis of possible spatial effects, we summed White-tailed Eagle activity scores over the period 1983-1999 for each Golden Eagle range (for example, if there were rare observations of use by White-tailed Eagle (activity score = 1) in every year then the range would have an activity score of 17 (1 x 17 years)). We placed each Golden Eagle range in one of 2 categories based on cumulative activity scores for White-tailed Eagle between

1983 and 1999. Ranges with cumulative activity scores of 34 or less (representing the mid point of potential scores) were classed as having low White-tailed Eagle activity and those with cumulative activity scores over 34 as having high White-tailed Eagle activity. We then compared productivity (number of young fledged per year) of the 2 classes with a Mann-Whitney test. We also correlated Golden Eagle productivity with White-tailed Eagle activity scores for Golden Eagle ranges (variables were approximately normally distributed: one sample Kolmogorov-Smirnov tests).

In our analysis of possible temporal effects, we examined annual White-tailed Eagle activity scores for each Golden Eagle range. We took the first year to show an increase in the activity score as the first year of a 'high White-tailed Eagle activity' period and classed preceding years as the 'low White-tailed Eagle activity period' period. As activity scores did not always remain stable from year to year, we assumed an increase had occurred only when an increase in activity score was sustained for at least 3 years. We then calculated Golden Eagle productivity (number of fledglings per year) of each range for low and high White-tailed Eagle activity periods.

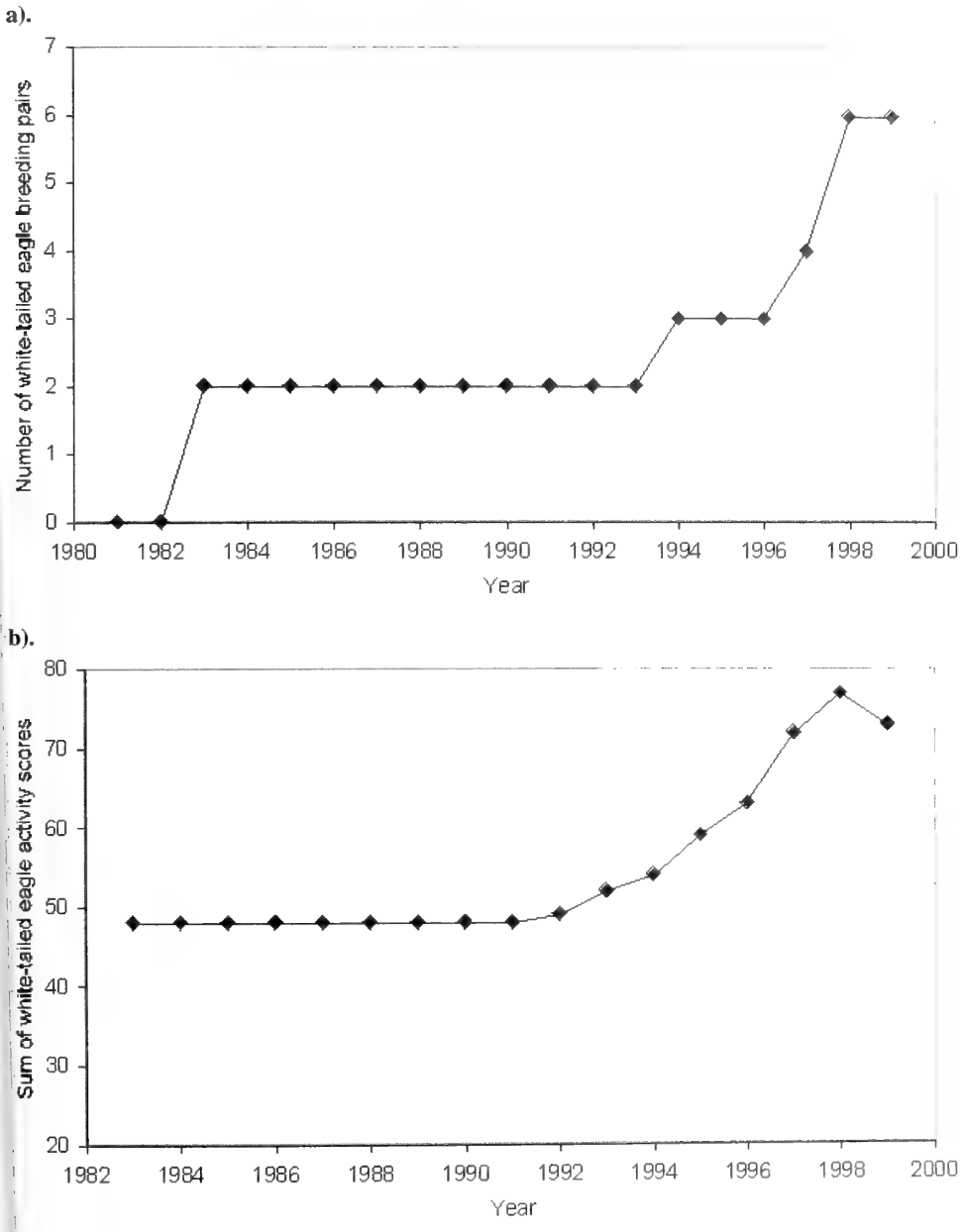
Annual breeding success of Golden Eagles can vary markedly (eg Watson 1997, Steenhof *et al* 1997). Productivity of some Golden Eagle ranges on Mull was also adversely affected by canopy closure of commercial forest plantations (Whitfield *et al* 2001) and this was more likely to occur later in the study period. Hence, we had to account for 'year effect' and any effect of new forests in our productivity measures. We did this by evaluating productivity relative to the productivity of 6 Golden Eagle ranges which experienced no increase in White-tailed Eagle activity or new forests over the study period. In addition, we analysed ranges only if they were not affected by canopy closure of new forests. We calculated standardised productivity scores for each range during both low and high activity periods. A standardised score was the difference in productivity between the range in question (for years with productivity data) and the productivity of the 6 "control" ranges (for the same years). We then carried out a Wilcoxon signed ranks test to determine if standardised productivity scores declined due to increased White-tailed Eagle activity (see Kochert *et al* 1999 and Whitfield *et al* 2001 for use of a similar method).

We did not formally test the effect of White-tailed Eagle activity on Golden Eagle range occupancy, as no Golden Eagle ranges were abandoned. Although one tailed tests of possible effects on Golden Eagle productivity are appropriate if one accepts the suggestion made by previous studies that White-tailed Eagle activity will have a negative effect on Golden Eagle biology, there are plausible reasons why White-tailed Eagle activity might have a positive effect on Golden Eagles and so all tests were 2 tailed.

Results

Between 1983 and 1993 the number of breeding White-tailed Eagle pairs and the activity of White-tailed Eagles within Golden Eagle ranges was stable, but from around 1994 onwards, there was a period of increase in both measures (Fig 1). There was no marked difference in productivity between the 2 groups of Golden Eagle ranges that were classified as having high or low White-tailed Eagle activity (median productivity, low activity 0.44, high activity 0.47; U = 101, N low = 17, N high = 12, P = 0.97). Restricting analysis to only those ranges with no influence of forestry had little effect on the result (median productivity, low activity 0.50, high activity 0.59; U = 17, N low = 5, N high = 7, P = 0.94). With the available sample size (29 ranges), there was only a reasonable power

Fig. 1. ***Annual changes in a) the number of breeding pairs of White-tailed Eagle, and b) the combined White-tailed Eagle activity scores on Golden Eagles ranges, on the island of Mull, western Scotland.***



(>0.7) to detect a correlation of greater than ± 0.4. Nevertheless, there was no evidence of a strong positive correlation between the productivity of Golden Eagle ranges and the activity scores of White-tailed Eagle for Golden Eagle ranges (r = -0.20 ± 0.37 95% CL, P = 0.30, N = 29). The relationship was similar when the analysis was restricted only to ranges where there had been no influence of forestry (r = -0.20 ± 0.61 95% CL, P = 0.54, N = 12).

In our analysis of temporal effects, the activity scores for White-tailed Eagle increased in 7 Golden Eagle ranges where there was no influence of forestry during the study period. Median productivity scores were 0.19 and 0.44 for low and high White-tailed Eagle activity periods respectively. One range showed a decrease in productivity score and 6 ranges showed an increase in productivity score following an increase in White-tailed Eagle activity. The change in productivity was in the opposite direction to that expected if White-tailed Eagles were having an adverse effect (Wilcoxon Z = -1.69, P = 0.09). Two Golden Eagle ranges where White-tailed Eagles started to breed in 1983 could not be included in this analysis as low availability of data from 'unaffected' ranges prior to 1983 prevented calculation of standardised productivity scores for these 2 ranges. Non-standardised productivity (fledging rate) in these 2 ranges before and after the settlement of breeding White-tailed Eagles did not differ consistently (before: 0.78 and 0.46, N = 9 and 13 years; after: 0.53 and 0.77, N = 17 and 17 years). Six White-tailed Eagle territories were established during the study period. None was associated with range abandonment by Golden Eagles and only one was associated with any change in Golden Eagle nest site use. In this case, 2 years after the death of an adult female Golden Eagle (probably through intra specific aggression) and with no appearance of a replacement female, a favoured Golden Eagle nesting cliff was occupied by a White-tailed Eagle. After 6 years of no successful breeding attempts, White-tailed Eagles abandoned the cliff and it was re occupied by a pair of Golden Eagles.

Discussion

The increase in White-tailed Eagle activity and breeding pairs on Mull from 1994 to 1999 was not mirrored by any island wide change in the fledging rate of Golden Eagles. The production rate of twin fledglings declined in Golden Eagles between 1987 and 1999, but this was probably attributable to changes in weather (Watson *et al* in press). There was also no overall change in the number of occupied Golden Eagle ranges (Whitfield *et al* 2001).

Although our analyses involved 7% of all Golden Eagle ranges in Scotland (Green 1996), our tests of possible competitive effects between the 2 species had low power due to low sample size. This is a common problem in conservation biology, but not one that should necessarily deter judgements of effect (Caughley 1994). In our spatial analyses we found a low negative correlation between Golden Eagle productivity and the activity of White-tailed Eagles. With the available sample size we could not estimate low correlations with a high degree of precision, but we could at least tentatively conclude that the levels of White-tailed Eagle activity observed to date have not had a strong effect on Golden Eagle productivity. Our spatial analyses were confounded by other influences on Golden Eagle productivity and our test of temporal effects was stronger, as between range differences in Golden Eagle productivity were controlled for.

In our test of temporal effects, we found higher productivity of Golden Eagle ranges following

an increase in White-tailed Eagle activity. This was unexpected if White-tailed Eagle activity has a depressive effect on Golden Eagle productivity. It is possible that the presence of White-tailed Eagles benefited the Golden Eagles by an increase in protection from nest robbers, but none of the Golden Eagle ranges had a history of nest robberies. Alternatively, the result might suggest local increases in food supplies benefiting both species, or that White-tailed Eagles have tended to settle on ranges occupied by more experienced Golden Eagle pairs, which enjoyed enhanced breeding success. Whatever the explanation, we suggest that the present study found no biologically significant adverse effects of White-tailed Eagles on Golden Eagles.

Only one temporary change in Golden Eagle nest site occupancy remotely suggested exclusion by White-tailed Eagles. Crane and Nellist (1999) describe another example of White-tailed Eagles occupying a Golden Eagle nest site, on the Isle of Skye, although as in this study, Golden Eagles did not abandon the range but merely moved to an alternative nest site. White-tailed Eagles have been known to kill Golden Eagles (Watson 1997) but Golden Eagles can also kill White-tailed Eagles and occupy their nest sites (Willgohs 1961, Bergo 1987). Despite such records, many years of observations on Mull have revealed numerous examples of close proximity between the 2 species with no aggressive interactions (R A Broad unpublished). Two recent reviews of White-tailed Eagles in Scotland away from Mull have also concluded that as yet there appear to be few signs that their re introduction has had a serious effect on resident Golden Eagles (Nellist and Crane 2001, Love in press).

Previous studies suggested that reintroduced White-tailed Eagles would displace Golden Eagles from parts of western Scotland through competition. The argument favouring competition has 3 strands. First, in the nineteenth century, Golden Eagles were scarce on the coast of western Scotland in the presence of White-tailed Eagles, but occupied coastal ranges following extermination of White-tailed Eagles (Love 1983). This has been interpreted as competitive exclusion and subsequent colonization in the absence of a competitor (eg Thom 1986, Watson *et al* 1992; Watson 1997, Halley 1998). Second, a recent comparative dietary study found a strong overlap and inferred competition for food (Watson *et al* 1992). Third, a stronger degree of overlap in the 2 species' distribution in modern Norway than in western Scotland in the nineteenth century has been interpreted as evidence that, when live prey is low due to environmental degradation, White-tailed Eagles will outcompete Golden Eagles (Halley 1998). The assumption of historical competitive exclusion (argument 1) is fundamental. All other lines of evidence for competition rest on this assumption, but we would argue that several arguments point to it being flawed.

The distributions of both eagle species in nineteenth century Scotland were undoubtedly heavily affected by persecution (eg Gordon 1920, Love 1983). Love (1983) suggests that even in inland areas the Golden Eagle was restricted to deer forests in the Scottish Highlands, where land managers were more tolerant of its presence. Incidentally, the figure used by Love (1983) to illustrate this point has since been used to infer competition. Although persecution of both species dramatically intensified during the nineteenth century there is evidence of organised persecution from much earlier (eg Love 1983, Lister-Kaye 1994, Ralph 1996). Intense persecution, coupled with an intrinsic difference in the 2 species' ecology (Morris 1866, Gray 1871, Harvie-Brown and Buckley 1892, Gordon 1915, Baxter and Rintoul 1953, Ralph 1996), seems to us a more likely explanation of nineteenth century distribution

patterns than interspecific competition. The subsequent expansion of Golden Eagles into areas formerly associated with the presence of White-tailed Eagles may have been due not so much to the absence of competing White-tailed Eagles, but to reduced persecution (Watson 1997). Changes in food supply resulting from increased numbers of sheep and red deer *Cervus elaphus* (Love 1983, Lister-Kaye 1994, Scottish Natural Heritage 1994) may also have assisted the expansion of Golden Eagle range in western Scotland, although increased stock densities should not necessarily be equated with increased availability of carrion (Fuller and Gough 1999), which may support high densities of Golden Eagles (Watson 1997).

A second argument for competitive effects is an apparently strong overlap in diet found by a study in Scotland in the 1980s, with both species apparently relying heavily on sheep and deer carrion (Watson *et al* 1992). It may be unsafe to place too much emphasis on this study, as it occurred relatively soon after the start of the White-tailed Eagle re introduction scheme and involved only 2 White-tailed Eagle pairs on Mull (Watson *et al* 1992). Overlap in resource utilisation, while a prerequisite for a demonstration of competition, deserves careful consideration and its interpretation is difficult (Wiens 1989). For example, if White-tailed Eagles and Golden Eagles obtain carrion from different habitats, the fact that carrion occurs in both diets does not indicate competition. White-tailed Eagle nests on Mull tend to be found in lower altitude habitats to those used by Golden Eagles and this may suggest that carrion is obtained in different areas (P F Haworth and R J Evans unpublished data, see also Nellist and Crane 2001). In some birds, a substantial overlap in resource use between species can be indicative of a 'superabundant' resource and minimal competition (reviewed by Wiens 1989). Pout (1997) concluded that, on the Isle of Harris, sheep carrion was well in excess of the requirements of most Golden Eagle pairs. Taking all these considerations together, the dietary overlap documented by Watson et al (1992) may be considered as only weak evidence of contemporary competition and recent analysis seems to indicate less dietary overlap than the earlier study (Marquiss *et al* in press, Madders & Marquiss in press).

We see several difficulties in the third argument for competition. A stronger degree of overlap in the 2 species' distribution in modern Norway than in western Scotland in the nineteenth century has been interpreted as evidence that, when live prey is low due to environmental degradation, White-tailed Eagles will outcompete Golden Eagles (Halley and Gjershaug 1998, Halley 1998). First, it is clear from many nineteenth century accounts that, at least at the scale of large islands (such as Mull, Skye and Harris), the ranges of the 2 species overlapped in Scotland (Morris 1866; Gray 1871, Harvie-Brown and Buckley 1892, Gordon 1915, Baxter and Rintoul 1953, Ralph 1996) in spite of persecution and intrinsic differences in the 2 species' ecology. Second, nineteenth century accounts (eg Morris 1866) indicated that the diet of Scottish White-tailed Eagles in the nineteenth century was principally fish and waterbirds, as is the case over much of the species' range today (Wille and Kampp 1983, Willgohs 1984, Sulkava *et al* 1997). Third, sporting estate and fishing fleet records, which form much of the evidence for contemporary environmental degradation of the western Highlands, suggest that widespread declines in wild non predatory fauna did not occur until the early twentieth century, after the White-tailed Eagle had been exterminated (eg Hudson 1992, Hunter 1994). Fourth, Halley (1998) dismissed direct access to food as a competitive mechanism because of the results of Halley and Gjershaug (1998) and favoured an indirect

competitive mechanism, of superior digestive capabilities by White-tailed Eagles. However, even though the Golden Eagle is a smaller bird, it seems to require less food relative to body weight than the White-tailed Eagle (Fevold and Craighead 1958, Brown 1978, Love 1979, 1983, Wille and Kampp 1983). This is not in keeping with the Golden Eagle being at a disadvantage in any indirect competition over food supplies.

More attention has focussed on competition over food than competition over nest sites. Tree nesting by Scottish White-tailed Eagles in the nineteenth century appears to have been less common than in modern western Scotland (Love 1983, this study). It is possible that suitable trees for nest sites are more available now than formerly (Birks 1988, Lister-Kaye 1994, Halley 1998), but trees currently used by White-tailed Eagle for nesting in Scotland tend to be large (R J Evans unpublished data) and therefore probably old and of types likely to have been equally available during the nineteenth century. More probably, the low number of documented tree sites in nineteenth century Scotland was due to the greater vulnerability of tree sites to persecution and the earlier abandonment of these sites (eg MacKenzie 1921). It is also possible that lower numbers of socially dominant Golden Eagles (Halley and Gjershaug 1998) in coastal Scotland in the nineteenth century may have allowed White-tailed Eagles to use cliff nest sites more often. Disentangling the effects of differences in woodland cover, persecution and possible direct competition over nest sites is difficult, but it may be that, in modern Scotland, the presence of Golden Eagles combined with a shortage of suitable trees may restrict the availability of unoccupied nest sites for White-tailed Eagles. In some areas, this effect may be limiting the expansion of White-tailed Eagles. Direct interference competition over nest sites may be very difficult to demonstrate, but is worthy of examination.

It is only 15 years since White-tailed Eagles started to breed again on Mull but so far there have been few of the indications of attrition in either productivity or range occupation of Golden Eagles which might be expected if the 2 species were competing for food. Evidence for competition is weak: so far the field signs suggest that the re introduction of the White-tailed Eagle may have only minimal effects on the Golden Eagle population and that the 2 species can co exist at current resource levels. It may still be too early in the reintroduction programme of the White-tailed Eagle to dismiss completely competition for food as an important factor. Hence, efforts to increase the availability of live prey should be encouraged; even if an increase in prey does not affect interspecific competition, it may increase productivity and/or numbers of breeding pairs. If competition for nest sites occurs, it may slow the re establishment of White-tailed Eagles, unless artificial nests are provided. Monitoring of both eagle species should be continued and the present type of analysis repeated in the future and in other parts of western Scotland to overcome the main problems with the present study; small sample sizes and a short period of interspecific contact.

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SHORT NOTES

Winter nesting Tawny Owl in West Lothian

On 9 March 2001 a juvenile Tawny Owl *Strix aluco* was found freshly dead in a field near Linlithgow Loch in West Lothian, at the end of a very cold spell during which the loch was partially frozen over. Although well feathered the plumage was still partly downy especially on the head and underside, and the main flight feathers on the wings and retrices on the tail were still half encased in their quill cases. It was found on open grass among parkland trees and it seemed very unlikely that it had been able to fly more than a very short distance from its nest. The bird was very thin and had probably starved to death.

At first it was thought to be a Little Owl *Athene noctua* as the overall length was only 21cms, little more than half the length of a fully grown juvenile Tawny Owl, 37-38 cms. From the feather development it was estimated to be not less than 5 or 6 weeks from hatching, which gives a laying date in late December when there had been much milder weather. The breeding chart in *The Birds of the Western Palearctic* shows only exceptional laying before mid February in north west Europe and Britain, with the earliest hatching at the beginning of March, the average date being mid April.

Due to foot and mouth restrictions in the area, it was not possible to attempt to locate where the young bird had come from or what had happened to any other young from the brood. Tawny Owls breed regularly in the area but there is no previous record of unusually early breeding.

The specimen has been submitted to the Royal Museum of Scotland in order to validate the record.

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Common Ravens breeding for the first time at 5 years old

On 10 April 2000, while walking along a stretch of cliffs in the West Mainland of Orkney, I flushed a Common Raven *Corvus corax* from a nest. This was the first time that I had seen Common Ravens nesting at this location, which was close to a public footpath. I knew from a white colour ring that this was a bird I had ringed as a nestling in 1995. I returned to the site on 21 April but it was deserted. The nest had been pulled off the ledge onto the beach below and the eggs lay broken amongst the lining.

In early May 2001, I was informed that a pair of Common Ravens had a nest with young in a small coniferous plantation in the West Mainland. This was a territory that had only been occupied on one previous occasion, when no young had been reared. I visited the site on 10 May but found that the nest, which had been built on top of the remains of the original one, contained 3 young. The adult was circling over the plantation and I was able to see from a yellow colour ring that this was a bird ringed as a nestling 5 years before in 1996.

As I monitor the Common Raven breeding population of Mainland Orkney each year I am fairly certain that both 5 year old colour ringed

birds were breeding for the first time. The only previous occasion I had been able to obtain information on the age at which Common Ravens first breed in Orkney was for a 6 year old wing tagged bird (Booth, C J 1986 Raven breeding for the first time at 6 years old *Scottish Birds* 14:51). Ratcliffe (Derek Ratcliffe 1997 *The Raven* T & A D Poyser, London) gives 4 instances of first breeding at 2 years old and mentions a captive bird first laying at 4 years old. He notes that the average age of first breeding is not known.

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Talon grappling and aggressive interactions by Merlins in winter

Merlins *Falco columbarius* will touch talons during aerial chases at their roosts and during the day in winter, apparently with little antagonism (Dickson 1973, *Scottish Birds* 7: 228-292; 1991, 16:141-142), but extensions of this behaviour occurred in west Galloway on 3 occasions in 1986-97.

On 7 October 1986 a brown Merlin, female or juvenile, was sitting on a fence post when it was swooped on by a brown Merlin, a male by size. They gained height and were joined by another brown Merlin. All swooped on each other, turning over on their sides and interlocked talons. On 4 October 1991 a brown Merlin was hunting a Common Linnet *Carduelis cannabina* flock when another, smaller brown Merlin, male by size, appeared. Both swooped up, turning on their sides, talon grappling. The first Merlin flew away followed by the smaller Merlin which landed in the field only to be swooped, closely and aggressively, by the other bird. On 26 January 1997 a brown Merlin, male by size, was hunting a Common Linnet flock. It flew quickly across the field for a short distance, met another brown Merlin and both talon grappled and flew on. The only published record on talon locking in winter involved a Merlin and a Peregrine Falcon *Falco peregrinus* when the Peregrine rolled upside down and interlocked talons (Wallen 1992, *British Birds* 85:496).

Apart from talon grappling, I recorded only 4 other occasions between 1965-2000 when Merlins reacted aggressively during hunts. On 6 January 1974 a brown Merlin swooped on another brown Merlin sitting on a fence post and displaced it. For the next 35 minutes, the first Merlin displaced the second Merlin 5 times, each time the birds fluttered together in the air. The first Merlin eventually flew away to hunt. On 16 January 1991 a brown Merlin flew down from a fence post and swooped, threateningly, on another brown Merlin on the ground, which 'fluttered' its wings and mantled its prey. The first Merlin landed beside it and tried to displace the other Merlin from its prey before flying back to the post. Five minutes later the first Merlin repeated the same tactics swooping on the second Merlin which again mantled its prey. The first Merlin circled and flew back to the fence post before flying away whilst the second bird ate its prey. On 13 November 1994 while a male Merlin hunted Sky Larks *Alauda arvensis*, a brown Merlin appeared and both birds flew

towards some fence posts. The male swooped, antagonistically, on the other Merlin and, as he landed, the brown Merlin displaced him from one of the posts. The male Merlin flew away followed by the brown bird. On 8 November 1996 a male Merlin hunted a Common Linnet, unsuccessfully, and landed on a fence post only to be displaced by a brown Merlin. A second brown Merlin appeared and landed beside the other 2 Merlins. Four minutes later a male Hen Harrier *Circus cyneus* approached the Merlins and all 3 flew up and circled. The male Merlin flew in a wide circle and tried to displace a brown Merlin from a fence post by hovering directly above but the male failed to displace it.

Interestingly, Warkentin & Oliphant (1990, *Journal of Zoology*, London 221:539-563) found similar interactions in winter in Canada when a yearling female Merlin ignored a second brown bird hunting in the vicinity while she was eating, but proceeded to chase this same bird once she had finished her meal. In another instance a yearling female chased a brown bird, male by size, to the ground and took a partially plucked House Sparrow *Passer domesticus* he was carrying.

There is, apparently, little aggressive behaviour between conspecifics in winter (Cramp & Simmons 1980, *The Birds of the Western Palearctic*, vol 2, Oxford) but it would seem that talon grappling and displacement activity are aggressive encounters between Merlins, especially if one interferes with another during a hunt.

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Hen Harrier's sunning behaviour in summer and winter

Information on the sunning behaviour by Hen Harriers *Circus cyaneus* has not been well documented, although Brown and Amadon (1968, *Eagles, Hawks and Falcons of the World*, London) mention, without details, they have been observed to 'sun bathe'. This note reports 4 instances of the Hen Harrier's sunning behaviour in winter and summer recorded during studies in west Galloway.

On 16 December 1979 at 1036 GMT a relatively cool, cloudless, sunny day (5°C), I watched a female or juvenile Hen Harrier preening and stretching on a fence post. Half an hour later the harrier adopted the standing spreadeagled sunning posture with its back turned towards the sun. The harrier's wings were outspread for more than a minute, similar to the behaviour recorded by a Peregrine Falcon *Falco peregrinus* in winter (Dickson 1995, *Scottish Birds* 18:58-59).

On 12 May 1984 at 1200 BST on a warm and sunny day, a female Hen Harrier arrived back in its breeding area and landed on a grouse (Willow Ptarmigan *Lagopus lagopus*) butt. Two minutes later, after preening, she adopted a standing full spreadeagled sunning posture, with her tail spread and her back to the sun showing her white rump.

On 27 August 1984 at 0946 BST on a warm but misty day, I watched 3 fledgling Hen Harriers standing on a grouse butt in a different breeding area about 300m from the nest site. They stood

idly, occasionally preened and walked about on the butt. Ten minutes later, the sun broke through and one of the young lay flat on the butt with its wings spreadeagled in a sunning posture, back to sun exposing its white rump.

On 1 May 2002 at 1050 BST a day of sunny spells and a cool wind, a male Hen Harrier arrived back in its breeding area and landed in a grassy patch where it preened on the lee side of a heather ridge. During a spell of warm sun at 1124 hrs, the male adopted the full spreadeagled sunning posture, standing with wings outspread showing his white rump. Twice more it adopted the same attitude when the sun shone, latterly adopting a loose spreadeagled posture before flying away at 1135 hrs.

Other raptor like the Eurasian Sparrowhawk *Accipiter nisus*, Merlin *Falco columbarius* and Peregrine Falcon use a standing full or loose spread wing sunning posture and the spreadeagle sunning position on the ground has also been observed in these species (Simmons 1986, *The Sunning Behaviour of Birds*, Bristol; Dickson op cit, 1998 *Scottish Birds* 19:176; Rollie 1999, *Scottish Birds* 20:39) although this behaviour is not previously documented in the wild by Hen Harriers.

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Mass deaths of Northern Gannets

On approximately 25 May 1988 (verbally reported to JBN on 2 July as 5-6 weeks ago) Fred Marr of North Berwick and F Bremner, Principal Lighthouse Keeper on the Bass Rock, noted the remarkable phenomenon of a large number (conservatively estimated between 50-100) of dead and dying Northern Gannets *Morus bassanus* in the sea less than one km north east of the Rock. Several appeared to have twisted or broken wings. There was no clue as to cause of death. As the merest speculation one might suspect an underwater detonation affecting a 'raft' of resting birds. There was no sign of a rock fall that might conceivably have hurled nesting birds into the sea nor is the Bass prone to them. Until recently JBN had no record of anything comparable affecting gannets elsewhere. But on 16 March 2001 BA chanced across 76 dead gannets on about 100m of beach at the mouth of a burn near Dunbar NT629815. Some were partly buried and all were thought to have been dead for perhaps 2 weeks. They were not oiled and no other species were involved. Previously there had been a period of strong to gale force north and north easterly winds, but due to limited access (Foot & Mouth Disease) the weight and condition of the birds was not noted. In any case it seems most unlikely that even if 76 birds had starved individually they would all have ended up within 100m, and more likely that a single incident had affected them all. Again, however, there is no clue as to what it was. An underwater explosion seems possible but the nature of such an event remains obscure. One or 2 possibilities spring to mind but speculation would not be fruitful.

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Fulmars nesting in a man made ditch

In Shetland many Northern Fulmars *Fulmarus glacialis* nest away from sea cliffs, occupying banks and disused buildings (e g Gibbons, D W, Reid J B & Chapman R A, 1993. *The New Atlas of Breeding Birds in Britain and Ireland*; 1988-1991. Poyser, London, Johnston J L, 1999. *A Naturalist's Shetland.* Poyser, London). On 9 June 2001 I located 16 birds incubating in a shallow ditch, some 200m in length, running parallel with the airfield runway on Unst. The runway ceased to be used on a regular basis from March 2001; it is not known whether the birds occupied the site before then but this would seem likely. The ditch is situated about one km from the sea at Baltasound.

I photographed the site and birds on 9 June; they were all reluctant to leave and were not disturbed. Birds were scattered the length of the ditch, presumably occupying the better ledges; in one small area there were 6 birds sitting within about 30m.

I checked the site again on the 30 July expecting to see some chicks but all had gone, presumably having suffered predation; the only trace of their presence being some egg shell fragments.

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Winter site fidelity of Fieldfares in south west Scotland

Wintering Fieldfares *Turdus pilaris* in Britain are generally thought to have a highly variable, nomadic, migratory behaviour (Snow, D W 1986, Fieldfare, in *The Atlas of Wintering Birds in Britain & Ireland.* Calton). At the start of winter 1996 a study was initiated to investigate various aspects of wintering Fieldfare behaviour on the north shore of the Solway Firth, Dumfries and Galloway, south west Scotland (55° 00'N, 3° 26'W). This note presents evidence of site fidelity resulting from the study, which was centred around the small village of Clarencefield. The study area comprised open lowland farmland, much of which adjoined large conifer plantations where most of the birds roosted.

Fieldfares were colour ringed to assess movement within the study area. Birds were mainly trapped at the centre of the study site. Birds were caught either by an elastic powered clap net baited with apples sited in an orchard or mist nets set adjacent to low (< 3m.) Hawthorn *Cartaegus monogyna* hedges, in feeding areas. Mist netting usually took place in the morning utilising tape lures and often a stuffed specimen as a decoy. Birds caught during 1996/97 were colour ringed using a sequence relating to month and year. All birds were individually colour ringed throughout the 1997-98 season.

Fieldfares normally arrived in the study area in late October. The study area was visited weekly during 2 (1996-97 and 1997-98) winters from October to April inclusive. A fixed route through the study area was normally driven early in the morning but often in different directions until it was established that there was minima movement between feeding areas. From here o weekly transects ceased and remaining visit concentrated on more detailed observations c birds feeding within one feeding area.

Fieldfare numbers and presence/absence c marked birds were recorded along this 38 mi

transect. Large flocks of similar size within neighbouring feeding areas were frequently checked to see if movement and hence double counting had taken place. This was determined by rechecking the size and location of specific flocks. No double counting was recorded. Observations were mainly made from a car using 10x40 binoculars and a 20-60x60 spotting scope. Field number and crop type utilised were recorded. Fieldfares usually fed on one of 7 identified "favoured" areas; each consisted of approximately 4 or 5 neighbouring fields. The numbers of birds checked and number of birds ringed and resighted is shown in Table 1. All 7 feeding areas were checked for colour marked birds; only one was found to support colour ringed birds (area 4).

Table 1 ***Total number of Fieldfares colour ringed and checked during 2 winter seasons.***

Winter	Number of birds colour ringed	Number checked for colour rings	Total number of colour ringing sightings*
1996-97	32	1237	21
1997-98	19	1693	41

*This includes some repeat sightings as birds in 1996-1997 were not idividually identifiable. Birds were marked individually after the 1996-1997 season.

Fieldfare presence within the study area showed a generally similar pattern during both winters (1996-97 & 1997-98). The number of birds counted during weekly transect counts was low during October and November, with a mean of around 75 birds counted per transect. December proved to be a somewhat indeterminate month to establish any pattern. However numbers of Fieldfares noticeably rose during January, averaging over 150 birds. This trend increased until numbers peaked in March, with an average of 340 birds, dropping back down to an average of 190 birds per transect in April. Both winters were relatively mild with only occasional light snow and morning frosts.

The number of birds checked for colour rings (including ad hoc counts) as a percentage of all birds seen was relatively low; 25% in 1996-97 and 39% in 1997-98 (Table 1). During weekly transects of the study area (1996-1998) an average of 27.5% (range of 15-43%) birds were checked for colour rings within each "favoured" feeding area. Colour ringed birds were found within only one "favoured" feeding area (area 4). This involved a total of 33 observations of marked birds (including repeats). Six birds (12%) out of 51 colour ringed were recorded in subsequent months of the same winter, with individuals remaining present into April.

On 12 December 1997 a bird ringed in the previous winter returned to the study area and another bird trapped during April 1997 was seen again on 6 March 1998. Three individually marked Fieldfares (birds B, C and D) that showed strong site fidelity during the same season as their capture (Table 2), were noted wintering at the same site the subsequent winter, during January 1999. During a brief check through a Fieldfare flock on 28 November 2001, one of these birds (bird B) was seen again.

Of the 6 birds marked with the same colour sequence on 4 April 1997, 11 resightings were made, 9 during winter 1997-98 and 2 during 1998-99. On the 6 March 1998 2 birds carrying this sequence were seen together. Out of 51 colour ringed birds, 5 (10%) showed signs of site fidelity in subsequent winters. Birds trapped between mid November and early January showed a greater propensity to remain site faithful than those trapped before and after this period (Table 2). Only one bird marked in October was resighted, possibly as birds were still migrating through the area at this time. Numbers trapped

Table 2 ***Minimum number of colour ringed Fieldfares observed during same season as of original ringing, both winters combined.***

Month ringed	Number ringed	Month colour ringed birds observed						
		Oct	Nov	Dec	Jan	Feb	Mar	Apr
Oct	13		A					
Nov	11			B	B	B*	B	B
Dec	9			C	C,D*	C,D	C,D	D
Jan	11				*	*	E*	
Feb-Apr	7							

Individually ringed birds coded bird A- bird E.
*Colour ringed bird from 1996-1997 not individually identifiable.

after January were too small to provide reliable data. Counts undertaken after January suggest that birds marked during this period may include individuals already on the return passage.

Ringing recoveries show that many Fieldfares spend consecutive winters as far apart as Ireland and Italy. However some individuals, and possibly some populations, are faithful to winter sites (Milwright R D P 1994, Fieldfare *Turdus pilaris* ringing recoveries during autumn, winter and spring, analysed in relation to river basins and watersheds in Europe and the Near East. *Ringing and Migration*, 15, 129-189). At one site in Eastern England, out of 910 birds, 11 (1.2%) were trapped again in later winters (Milwright pers comm). Of the 278 British and Irish ringed Fieldfares which have been recovered during a winter subsequent to that of ringing, 15 (5.4%) were recovered within 20km of their ringing site (Milwright op cit). Thus the limited evidence of site fidelity found in Dumfries and Galloway is not unique. It may be that such behaviour is important, either for some individuals or for birds from a particular geographical range. More winter studies are needed to elucidate why site faithfulness in the species is so variable.

Environmental factors could have an impact on winter movements. Dumfries & Galloway is usually a very mild part of Scotland, which may go some way to explain the relatively high rates of winter fidelity found in this area.

Fully grown Fieldfares are difficult to catch, especially during mild weather conditions. It was only during snow or frost that Fieldfares became more susceptible to trapping, often coming to apples in an orchard. The small number of birds colour ringed has been a limiting factor int he amount of data collected and presented.

We thank the Wildfowl and Wetlands Trust at Caerlaverock, Mr & Mrs Freeman of Clarencefield Farm and Mr & Mrs Goldie of Longbridgemuir Farm for permission to catch Fieldfares on their land. Thanks also to Carl Mitchell and David Norman for help and encouragement, Sarah Berker, Ken Bruce, Steven Cooper, June Randell & Derek Skilling for fieldwork or by providing observations on local birds, North Solway Ringing Group for support and supplying metal rings. T W Dougall, R Riddington and R L Swann kindly commented on earlier drafts of this paper.

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Some hazards of barbed wire as a nesting material

In some areas of Orkney nesting material, such as sticks and twigs, is scarce. In these circumstances members of the crow family, particularly Common Ravens *Corvus corax* and Carrion Crows *Corvus corone* usually of the hooded race *cornix*, use lengths of discarded barbed wire to build the framework of their nests. Less frequently Rooks *Corvus frugilegus* and Eurasian Jackdaws *Corvus monedula* may also incorporate barbed wire in their nests. I have watched Eurasian Jackdaws repeatedly visit the disused nest of a Raven, break off pieces of rusty barbed wire and fly with them to their nesting crevices.

Although I have not so far come upon any of the nest builders who have had problems with barbed wire, on 3 occasions I have found Northern Fulmars *Fulmarus glacialis*, a species that often occupies disused Common Ravens' nests, that have suffered. On 7 February 1987 I visited a traditional Common Raven nesting site on the west coast of Mainland, Orkney. On a ledge were the remains of a Ravens' nest from the previous year, the framework of which was composed almost entirely of lengths of barbed wire. A freshly dead Fulmar was suspended from the nest, with its wing caught on the wire. At the same site, on 4 March 1997 and again on 14 June 2000, I discovered single, recently dead, Fulmars hanging upside down on the edge of the nest having become entangled in the wire. On the latter date another Fulmar was sitting the nest but flew away as I approached.

The use of barbed wire can also prove a nuisance to humans. At a rookery in the West Mainland of Orkney nests are built in branches which overhang the driveway of a house. Car tyres have been punctured by driving over small peices of barbed wire that had fallen from the nests.

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Female Eurasian Sparrowhawk caching prey

K Needle *et al* describe this in the December 2001 *Scottish Birds*. We had a similar experience in February 2001. The bird plucked the pigeon, moved along and commenced eating it. It hopped away and put it on a bush (there was snow on the ground) and then flew on to a nearby Sitka Spruce *Picea sitchensis* where it sat for a while and flew off. I examined the carcass and judged there was no meat left on it and binned it. The Sparrowhawk reappeared next morning, hopped around the bush where it had laid the carcass, apparently looking for it before flying off.

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Drowning of Short-Eared Owl by gulls

On 10 August 2002 we were working on the northeastern shore of Waulkmill Bay, Mainland, Orkney. At 1505hrs ARL saw a Short-Eared Owl (*Asio flammeus*) flying across the bay from heathland on the northeastern side of the bay towards similar habitat on the southwestern side. The tide was on the ebb and the owl was flying more or less above the water's edge at a height of about 25 m. Its flight was unhindered and characteristic of the species, that is, deliberate wing beats interspersed with brief glides. ARL drew TWW's attention to the bird and both watched it as it progressed on its way. When the bird was approximately two thirds of the way across the bay it disturbed a juvenile Herring Gull (*Larus argentatus*) which had been standing on an exposed sandbank at the water's edge. This in turn caused 4 Mew Gulls (*L canus*) to take flight, whereupon they started to mob the owl. Their mobbing did not appear intense, the nearest approach being estimated at more than one metre, with no contact or deviation in the owl's flight being noted. Then, after about a minute of this activity, the owl suddenly turned sharply to the left and peeled off into an almost vertical dive onto the water's surface, where it settled, at around 1508hrs. Initially it appeared unperturbed and the gulls ceased mobbing it. After a few seconds, however, the owl attempted to take off, but failed, its wings spread forward into the water. It made a second attempt, but was evidently becoming waterlogged, as its body was sinking lower into the water, especially at the anterior. It continued to flap its wings, apparently in an attempt to make for shore, but it was rapidly drifting towards the mouth of the bay under the influence of the force 3 northwesterly wind. At this point it was briefly mobbed by an adult Herring Gull. It now seemed to be struggling to keep its head above water, presumably being only intermittently able to breathe as a consequence. At 1518hrs, the owl's movements ceased and it was presumed to have drowned as a result of inability to keep its waterlogged body in a position where it could breathe. Several Common Eiders (*Somateria mollissima*) swam over to investigate the corpse, but on close approach, they immediately turned and swam rapidly away.

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Erratum

In Chris Mylne's note on high numbers of auks in the Forth, the figure of 60,000 recorded on the 11 January should be 6,000 (page 112, paragraph 2, *Scottish Birds* Vol. 22 No.2). Our apologies to the author.

OBITUARIES

Alan Hilton
1958–2001

It is with great sadness that we record the death of Tree Sparrow enthusiast and ringer Alan Hilton. Alan was a husband and father, and worked as an Information Analysis manager in the Lothian University Hospitals NHS Trust. Alan's death was the result of a sudden haemorrhage.

For Alan, ringing was less of a hobby and more of a way of life. He had a boundless enthusiasm for birds, and possessed a persistence and inventiveness that few could match. One example was over a decade of work at his Constant Effort Site at Turnhouse, Edinburgh, which was the second longest running in Scotland, and one of the longest running in the whole Scheme. Another was his important Tree Sparrow colour ringing project at Hallyards on the Almond. He persisted where other surveyors had given up, not only rediscovering the population but also establishing a nest box scheme with a remarkably high take up from the birds. He reported his findings in *Scottish Bird News* 60, December 2000 and, posthumously, in *SBN* 64, June 2002.

Alan's interest in birds went hand in hand with his attachment to natural places. From Mull to the Isle of May Alan always sought the company of wild places as an antidote to the humdrum of everyday life, and there he found and befriended many likeminded people. His spiritual home though was Tayside, and the Tay and its surrounding countryside remained thus for all of his life.

In his many years in the Edinburgh area he put down strong roots in the land. He was adept at ferreting out the best birding sites and developed an unrivalled knowledge of their rhythms and natural history. This knowledge he willingly shared with others, consequently many ringers in Lothian and Tayside benefited from his training. Many of us have fond memories of fruitful ringing sessions with Alan as well as the rare fruitless ones, which were an opportunity to share his witticisms and sideways glances at life.

Alan was fiercely independent in character, and was protective of his local birds. He used his local knowledge to great effect to extract practical conservation support from landowners, conservation organisations, the local council and the like, and was instrumental in dramatically saving Craigie wood from the paintball nightmare which would surely have surely been its demise. A Craigie fit for both people and wildlife is surely one of Alan's great legacies. He will be sorely missed by his family and friends.

Clive Walton

Bruce C Forrester
1955–2002

All of Scotland's birdwatchers will be greatly saddened by the death of Bruce Forrester on 24 February 2002. A tall, slightly gangling character, almost always present on the scene of British rarities, Bruce had personal qualities which reached far beyond the friendliness experienced by many at such gatherings.

Born in 1955 at Crosby, near Liverpool, his family moved north to Eaglesham in the summer of 1960. Attending Eaglesham Primary, and later Williamwood High, a further move following the death of Bruce's father, saw him come to Ayrshire where he attended firstly Prestwick Academy and later Ayr Academy. Obtaining a

diploma from Glasgow Art School, he started teaching Art at Largs Academy in 1977 before taking up a post at Carrick Academy, Maybole in 1992. He was indeed a very skilful artist, specialising in mosaics and hosting annual art displays at his house. The move to Carrick Academy was well timed since he had just married Eleanor who taught in Maidens Primary. The marriage itself, at Culzean Castle, was very appropriate since many of Bruce's ancestors had lived in the parish of Kirkoswald. After their marriage in 1991, they spent a lot of time travelling widely both in the UK and abroad, and were entirely devoted to each other.

My first acquaintance with Bruce was as a pure beginner at the Ayr Branch of the SOC where he generously gave his time and advice on both where to watch birds and how to identify them. At this time, during the early 1970s, both he and the late Billy Brackenridge were the local 'gurus' whose advice one always sought - and obtained. Bruce's commitment to birding was almost total, and his enthusiasm, along with that of his brother Ron, kindled many projects such as the local bird reports. Youngsters keen to take up the hobby found Bruce to be a patient coach, involving himself for many years with the Young Ornithologists' Club. In later years he would become the Chairman of the SOC Ayr Branch.

Patient he may well have been with people, but his frenzied antics in the field revealed another type of character (he was always credited with seeing the 1965 Cream-coloured Courser at Aberlady from his pushchair!). The fact that he could so easily dismiss such derision merely strengthened the belief that here was a man who would stop at nothing to pursue a rarity. Having experienced trips to the Scillies, and elsewhere in the UK, with Bruce at the helm, one escapade stands out in particular. Having arrived in Kent at 10pm one evening during the Easter holidays, news broke of a Savannah Sparrow at Portland. Most people would have sighed, and maybe thought of heading there on the following day. Not Bruce! It was as if his car had been caught in a gust of wind and spun around - we were now heading for Portland. The next 6 days took us to the tip of Cornwall, the New Forest, back to Kent and back north via Norfolk, Bruce well pleased with his haul of 9 BB rarities!

He was always keen to push on. So much so that, on one trip to the USA, having acquired one 'tick' more than he bargained for, I had to carry out minor surgery on Bruce's scalp with my penknife while he concentrated on driving as fast as possible to the next location! The notion that he was only keen on 'ticks', though, could not have been further from the truth since repeated trips to Brazil earned him the respect of birders just starting to visit South America, and he was often at his most enthusiastic when discussing birds that most of us would struggle to visualise.

I can still see Eleanor and Bruce at Scotland's first Snowy Egret, and well remember his appearance on January 3rd this year when an American Wigeon showed up at Irvine; (he'd already been up to Montrose the previous day to see an Ivory Gull!). This extreme eagerness to see and find was always evident and we'll all miss it. His infectious enthusiasm, enormous energy in seeking out birds, willingness to contribute to the future of birding, great skill and thoroughness in matters of identification and strong artistic talent were all encompassed by a genuine thoughtfulness towards both colleagues and strangers alike. These are qualities which singled out Bruce as one of Scotland's most accomplished and respected birders.

Angus Hogg

Dr Ian Durance Pennie MB ChB 1916–2002

Ian was born in the Parish of Fyvie, Aberdeenshire, on 20 March 1916, the son of a Canon in the Scottish Episcopal Church. He went on to Aberdeen Grammar School, and thence to Aberdeen University, where he took his medical degrees in 1939. This was followed by a period of service in the RAMC - first in France, Belgium and Holland, and finally in India, from where he was demobilised in the rank of Major.

Almost the whole of the remainder of his life was destined to be spent as a general practitioner in the County of Sutherland. He started in 1948 at Tongue, one of the most remote practices on mainland Britain. In 1940 he had married Janet Gillies, and after 5 years at Tongue, the educational requirements of their 2 growing daughters caused them to move to Golspie where, in addition to his practice, Ian held the post of anaesthetist at the local hospital. But 1966 saw a crisis point in his life. His marriage was foundering; he was becoming increasingly dissatisfied with the medical set up in Golspie; and he saw his chance of setting up a new life in a different field which had always been his main interest.

So he returned to Aberdeen University, and in 1967 emerged with a degree of MSc in Ecology. A year with the Nature Conservancy convinced him that there were no adequate prospects there for a man of his age. Reluctantly he returned to medical practice and found a temporary job in West Lothian, which he hated. This was the nadir of his life, from which he was rescued by a chance meeting with Edith Wilkinson, then working as a consultant anaesthetist in Liverpool, whom he had met 20 years earlier, while they were both serving with the RAMC in India. Ian was able to return to Sutherland in 1970 when the medical practice in Scourie fell vacant. Janet's tragic death in a car crash in 1971 enabled Ian and Edith to marry the following year. He retired in 1977, when he and Edith built their dream house above Badcall Bay, with a panoramic view over all the sensational Sutherland peaks that Ian had come to know so well in his earlier days.

Ian's contribution to the ornithological literature spanned over 50 years. His first was in 1942, when he recorded the finding of a White-tailed Eagle in Kincardineshire (*British Birds* 36:113): his last was in 1988, when, in typically scholarly style, he quoted historical evidence for the fact the killing by Great Skuas of Kittiwakes was no recent phenomenon. Of his many contributions between these dates, the following deserve special mention:-

Summer bird notes from Foula (*Scottish Naturalist* 1948: 157-163).
The history and distribution of the Capercaillie in Scotland (*Scottish Naturalist* 1950: 65-87, 157-178; 1951: 4-7, 135).
The Clo Mor bird cliffs (*Scottish Naturalist* 1951: 26-32).
Bird Notes from Spitsbergen, summer 1955 (*Sterna* 27: 49-63).
A century of bird watching in Sutherland (*Scottish Birds* 2: 167-192).
Scottish Ornithologists: 1. Sir Robert Sibbald (*Scottish Birds* 3: 159-166).
Scottish Ornithologists: 2. Martin Martin (*Scottish Birds* 4: 64-73).
Bird watching in Scotland (*Scottish Birds* 4: 126-142).
Bird watching in Sutherland (*Scottish Birds* 12: 113-117).
Sutherland Birds (1983) - joint author.
William Eagle Clarke (*Scottish Birds* 14: 153-156).

But of all his published notes by far the most bizarre concerned 3 separate cases of Fulmars perching on trees in Golspie - on one occasion 4 sitting together in a row on a single branch (*British Birds* 60: 90). That was in 1966. There is no mention of perching on trees in, for instance, *BWP*, but there have been several similar subsequent records in Sutherland.

Ian was a romantic at heart, and his imagination was particularly fired by remote places - the further north, the better. In 1948 he spent 16 days on Foula. The following year he accompanied the legendary yachtsman 'Blondie' Hasler in sailing to North Rona, where he landed and made the gruesome discovery of a desiccated human hand jutting up from the earth floor of the old village! He could not have imagined then that he would be landing again on North Rona 40 years later - this time as very much the senior statesman on *Ocean Bounty* in 1989, and again in 1990.

In 1953 he led one of the first post war pioneering expeditions to Swedish Lapland and 2 years later he achieved his ultimate ambition in leading a small party up to Spitsbergen, to which he was able to return in 1973 and 1981. His contributions in this field were acknowledged by his being made a life member of the Norsk Ornitologist Forening. Back at home, recognition came when he was elected to serve as President of the SOC for 1963–1966, and he was later elected an Honorary Member of the Club in 1980.

Ian was a typical product of the environment in which he had been brought up - down to earth, blunt, incisive, resourceful, inventive, and highly receptive of the excellent education which he had been given. He never lost the robust Aberdeenshire dialect, though he did allow it to be overlaid by the softer Highland accents of his adopted county, and he exploited this mixture to marvellous effect. His interests were wide, as was his knowledge of literature, and over the years he amassed one of the finest ornithological libraries in Scotland. In the field he was the very best of companions, unperturbed by any vicissitudes, though never lacking in words to describe them! His devotion to the Great Game of birding was splendidly recalled by one of his old Sutherland friends at his funeral service in the densely packed little church at Scourie. A patient, well known for hypochondriac tendency, telephoned his surgery demanding Ian's immediate attention. When told that the doctor was not immediately available but would come as soon as he could, the sour comment came back: "He'd have come quickly enough if I had been wearing feathers!"

Ian was a complete man. He was a major contributor to Scottish ornithology, and he enriched the lives of all those lucky enough to cross his path. His death removes the fund of much laughter. He is survived by his second wife Edith; by Catriona and Rona, daughters by his first marriage; and by his 6 grandchildren and 3 great grandchildren. Catriona continues the ornithological connection as a leading figure in the Fair Isle community. Rona, a keen naturalist who inherited her father's love of books and now lives in Norfolk, carries with her the name of the remote island that was part of her father's dreams - to be so happily and completely accomplished.

Dougal G Andrew

Ian Pennie with grandson Ewen, about 1985

Advice to contributors

Authors should bear in mind that only a small proportion of the *Scottish Birds* readership are scientists and should aim to present their material concisely, interestingly and clearly. Unfamiliar technical terms and symbols should be avoided wherever possible and, if deemed essential, should be explained. Supporting statistics should be kept to a minimum. All papers and short notes are accepted on the understanding that they have not been offered for publication elsewhere and that they will be subject to editing. Papers will be acknowledged on receipt and are normally reviewed by at least 2 members of the editorial panel and, in most cases, also by an independent referee. They will normally be published in order of acceptance of fully revised manuscripts. The editor will be happy to advise authors on the preparation of papers.

Reference should be made to the most recent issues of *Scottish Birds* for guidance on style of presentation, use of capitals, form of references, etc. Papers should be typed on one side of the paper only, double spaced and with wide margins and of good quality; 2 copies are required and the author should also retain one. We are also happy to accept papers on disk or by email at: mail@the-soc.org.uk, stating the type of word processing package used. If at all possible please use Microsoft Word . Contact the Admin Officer on 0131 653 0653 for further information.

Headings should not be underlined, nor typed entirely in capitals. Scientific names in italics should normally follow the first text reference to each species unless all can be incorporated into a table. Names of birds should follow the official Scottish List (*Scottish Birds* 2001 Vol 22:33-49). Only single quotation marks should be used throughout. Numbers should be written as numerals except for one and the start of sentences. Avoid hyphens except where essential eg in bird names. Dates should be written: ...on 5 August 1991...but not ...on the 5th... (if the name of the month does not follow). Please **do not** use headers, footers and page numbers. Please note that papers shorter than c700 words will normally be treated as short notes, where all references should be incorporated into the text, and not listed at the end, as in full papers.

Tables, maps and diagrams should be designed to fit either a single column or the full page width. Tables should be self explanatory and headings should be kept as simple as possible, with footnotes used to provide extra details where necessary. Each table, graph or map should be on a separate sheet, and if on disc each table, graph, map etc should be on a separate document. Please **do not** insert tables, graphs and maps in the same document as the text. Maps and diagrams should be either good quality computer print out and in black and white (please **do not** use greyscale shading) or drawn in black ink , but suitable for reduction from their original size. Contact the Admin Officer on 0131 653 0653 for further details of how best to lay out tables, graphs, maps etc.

The Scottish Ornithologists' Club (SOC) was established by a group of Scottish ornithologists who met together in the rooms of the Royal Scottish Geographical Society in Edinburgh on 24 March 1936.

Now, 66 years on, in 2002, the Club has 2200 members and 14 branches around Scotland. It plays a central role in Scottish birdwatching, bringing together amateur birdwatchers, keen birders and research ornithologists with the aims of documenting, studying and, not least, enjoying Scotland's varied birdlife. Above all the SOC is a club, relying heavily on keen volunteers and the support of its membership.

Headquarters provide central publications and an annual conference, and houses the Waterston Library, the most comprehensive library of bird literature in Scotland. The network of branches, which meet in Aberdeen, Ayr, the Borders, Dumfries, Dundee, Edinburgh, Glasgow, Inverness, New Galloway, Orkney, St Andrews, Stirling, Stranraer and Thurso, organise field meetings, a winter programme of talks and social events.

The SOC also supports the Local Recorders' Network and the Scottish Birds Records Committee. The latter maintains the "official" Scottish List on behalf of the Club. The Club supports research and survey work through its Research Grants.

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Records of species and subspecies recorded in Scotland on up to 20 occasions

IAN J ANDREWS AND KEITH A NAYLOR
ON BEHALF OF THE SCOTTISH BIRD RECORDS COMMITTEE

In 1996, the Scottish Bird Records Committee (SBRC) published a list of records of species recorded in Scotland on up to 5 occasions (Gordon & Clugston 1996), which has since been regularly updated (*Scottish Birds *19: 259-261, 21: 1-5 and 22: 31-32). Subsequently, SBRC decided to expand this list to include all acceptable records of species recorded on up to 20 occasions, and, more recently, to incorporate subspecies with a similar number of records. A total of 160 species and 19 subspecies are covered in this list. The ground work for this compilation had already been undertaken by Naylor (1996), and this has been reviewed and updated to include all records up to the end of 2001.

Introduction

The criteria for including records on this list (see below) have been defined on the basis of three date ranges. The first has an arbitrary cut off of 1st January 1901, whereas the second cut off of 1st January 1958 coincides with the establishment of the British Birds Rarities Committee (BBRC), and the first systematic attempt to assess records nationally.

(1) Records up to and including 1900

An attempt has been made to research as many pre 1900 records of species on this list as possible and to trace each record back to its original reference sources before it was reviewed. The primary sources of historical information were Gray (1871), the Harvie-Brown avifauna series, Saunders (1899) and Harting (1901), along with numerous articles in the *Proceeding of the Royal Physical Society of Edinburgh, Zoologist, The Scottish Naturalist* and the *Annals of Scottish Natural History*.

The aim of this review has been to establish a degree of consistency between records rather than to assess their absolute acceptability using modern standards. In summary, a combination of 2 or more of the following criteria has resulted in a record being square bracketed:

(1) there has been long-standing doubt expressed by past authors
(2) the identification or circumstances are under significant doubt due to a lack of detail or inconsistencies in the historical record
(3) the record/specimen lacks the contemporary support of having been seen by a "reputable" observer or displayed at a museum or meeting of a scientific society
(4) the record refers to a sighting

Whether the record was accepted in the contemporary literature and subsequently by Baxter & Rintoul (1928), Witherby *et al* (1938-41), Baxter & Rintoul (1953), BOU (1971) or Thom (1986) is a major consideration. In many cases, insufficiently well documented records were filtered out by the authorities of the day, but it is unfortunate that the criteria used, by for example Baxter & Rintoul (1953), were never detailed. In general, records in their 'less well substantiated' category are omitted.

The records listed in square brackets after the accepted records should, in most cases, be considered as 'possibles' and 'probables' rather than being totally unacceptable; nonetheless, they do not form part of the list and are not included in the totals. More comprehensive information on square bracketed (and accepted) records can be found in a fuller version of this text available as an Adobe Acrobat 'pdf' file available on the SOC web site (under SBRC).

(2) Records between 1901 and 1957 (inclusive)

The main reference for this period is Baxter & Rintoul (1953), who analysed all records published before 1st January 1951, with significant records published in 1951 included in an appendix. Records published between 1953 to 1959 are covered by SBRC's "review of ornithological changes in Scotland" papers compiled by E.V. Baxter and, later, J.W. Campbell (*Scottish Naturalist* 1955: 98-105, 1956: 1-9, 1957: 37-44, 1957: 170-177; *Scottish Birds* 1: 30-33, 117-120, 253-258). Listed 1950s records not covered by these reports, for whatever reason, are marked † and referenced. It may be that certain records from between 1950 and 1957 are being reviewed by BBRC, but the outcome of this assessment is still awaited.

(3) Records between 1958 and 2001 (inclusive)

For UK rarities, the details of all records for this period agree with that published in BBRC reports, except where additional information has been extracted from authoritative write ups (these are highlighted). Rejected records for this period are listed in the relevant BBRC papers, and are not repeated here. For species not covered by BBRC, details of 1984 and later records concur with the decisions made by the SBRC, and published in the *Scottish Bird Report*.

Area covered, and regional breakdown used

Most records in this review relate to birds that occurred on the Scottish mainland or islands. A few were seen in Scottish waters, as defined by agreed median lines with Norway, the Faroe Islands and Ireland and the 200 nautical mile (370 km) EU Fishery Limit (Fig 1). For the purpose of this study, 'onshore' Scotland has been subdivided into the current Local Recording Areas (Fig 1), which are here taken to extend to the '3 nautical mile limit'. Political subdivisions have undergone several major (and many minor) changes over the last century, and in some cases the old county in use at the time the records were published is also included. Offshore records are placed in the relevant UK Meteorological Office Shipping Forecast Area (sea area) (Fig 1), and additionally located either by geographic coordinates or a distance from a headland or town.

The figures given for each species/subspecies are the total number of individuals recorded in (1) Scotland (as listed in this report), and (2) Britain and Ireland to the end of 1957 plus Britain only from 1958 to 2001 (as given on the BBRC website [provisional version dated October 2002] or in *British Birds* 95: 476-528. Where the number of Scottish 'records' or 'occurrences' differs from the number of 'individuals' recorded, this is indicated by a *. Note that the British and Irish total will not take into account alterations to the Scottish List instigated by this report.

Systematic List

Pied-billed Grebe
Podilymbus podiceps (8, 36)

1975 **Dumfries & Galloway** Carlingwark, Loch, Castle Douglas, Kirkcudbrightshire, 1st to 8th October (L A Urquhart, A D Watson *et al*) (*British Birds* 70: 446; *Scottish Birds* 9: 297-298)

1977 **Northeast Scotland** Loch of Strathbeg, 9th January to 27th March (J Dunbar *et al*) (*British Birds* 71: 488)

1983 **Outer Hebrides** Askernish and Loch na Liana Móire, South Uist, 8th June to 22nd August 1985 (T Davis, A C B Henderson, K W Smith *et al*) (*British Birds* 77: 508)

1987 **Dumfries & Galloway** Lochmaben, 24th to 25th April (Dr N Armstrong, D & Mrs S Skilling, R T Smith *et al*) (*British Birds* 81: 539)

1998 **Upper Forth** Airthrey Loch, Stirling, 3rd to 7th June (K Ranson) (*British Birds* 92: 557)

1998 **Argyll** Loch Peallach, Mishnish Lochs, near Tobermory, Mull, 8th and 15th June (N & Mrs P McKee, M Cocker *et al*) (*British Birds* 92: 557)

1999 **Outer Hebrides** Loch Fada, Benbecula, 28th November to at least 11th December (A Stevenson *et al*) (*British Birds* 93: 516)

2000 **Highland** Loch Oscaig, Achiltibuie, Wester Ross, 24th to 25th April (S E Edwards *et al*) (*British Birds* 94: 455)

Red-necked Grebe
Podiceps grisegena

North American and North-east Siberian race *P g holboellii* (1, 1)

1925 **Highland** Aultbea, Wester Ross, shot, September (*Bulletin of the British Ornithologists' Club* 48: 53, 70; *Ibis* 1928: 321)

Black-browed Albatross
Thalassarche melanophris (maybe only 2, 15)

1967 **Lothian** Bass Rock, 18th May to 28th September (M J Everett, Prof. W H Thorpe, G Waterston *et al*); same, 13th April to about 20th July 1968 (F Marr *et al*) and again 10th April to 3rd May 1969 (F Marr) (*British Birds* 61: 22-27; *Scottish Birds* 5: 20-23)

2001 **Sea area Rockall** *MFV Celnius*, 57° 25' N 13° 28' W, second calendar year or younger, 3rd to 4th August (D O'Driscoll)

Other sightings, probably relating to the Bass Rock bird, are:

1968 **Sea area Forth** 16-23 km north east of Eyemouth, Berwickshire, 7th or 8th February (*British Birds* 62: 460)

1969 **Sea area Forth** 10 km off St Abbs Head, Berwickshire, 28th February (D McLeod) (*British Birds* 63: 269)

1969 **Fife** Elie Ness, 23th August (Dr I T & Mrs M M Draper) (*British Birds* 63: 269)

1969 **Orkney** Hoy, 13th August (K & M Janich, N van Swelm) (*British Birds* 63: 269; *Scottish Birds* 6: 26-27)

1972 **Shetland** what was probably the same bird, Hermaness, 21st July to 4th August (M Anderson, L R Cole) (*British Birds* 67: 342) and again in the summers of 1974-1995 (but not 1988 or 1989). Earliest and latest dates there are 14 February and 20 September.

Other sightings, the majority of which are probably attributable to this bird, are:

1972 **Fife** Fife Ness, adult, 8th August (4 days after last Hermaness sighting) (P A Lassey) (*British Birds* 66: 333; *Scottish Birds* 7: 308)

1975 **Orkney** Scapa Flow, adult, 21st August (2 days before last Hermaness sighting) (G G Bunting) (*British Birds* 69: 327)

1976 **Sea area Fair Isle** South of Lerwick, 27th July (G van Oordt) (*British Birds* 70: 412)

1978 Shetland Yell Sound, 21st and 26th July (Leicester Polytechnic Expedition per J D Okill) (*British Birds* 72: 508)

1984 Sea area Irish Sea North Channel, about 10 km west of Corsewall Point, 7th August (D Allen) (*British Birds* 83: 442) (reported at Hermaness from 27 February, but no last date given)

1990 Sea area Viking About 185 km east of Sumburgh, 60° 00' N 02° 00' E, 30th January (A Campbell) (*British Birds* 87: 508)

1990 Sea area Cromarty 12.6 km north of Portnockie, 57° 49' N 02° 50' W, 5th September (M F Leopold, P Wolf) (*British Birds* 86: 452)

[1980 Outside UK waters]

Albatross sp.
Diomedea sp (2, 26)

1949 Fair Isle immature, 14th May (*Scottish Naturalist* 1950: 23-24)

1995 Orkney Off Hoy, 4th September (S Tonge) (*British Birds* 89: 485)

[1894 Sea area Fair Isle]

Soft-plumaged Petrel
Pterodroma sp. (1, 21)

1996 Sea area Fair Isle About 130 km WNW of Unst, 60° 56.56' N 03° 05.37' W, 25th June (R W White) (*British Birds* 90: 457; *Scottish Bird Report* 1996, 71-72)

Not specifically identified, but accepted by BBRC as a Madeira/Soft-plumaged/Cape Verde Petrel *Pterodroma madeira/mollis/feae*

Little Shearwater
Puffinus assimilis (4, 61)

1974 Argyll Off Frenchman's Rocks, Islay, 30th June (K Verrall) (*British Birds* 68: 310; *Scottish Birds* 9: 380-381)

1985 Dumfries & Galloway Corsewall Point, Wigtownshire, 14th September (R H Hogg, P McEwan, G Mitchell) (*British Birds* 79: 529; *Scottish Birds* 14: 125)

1990 Outer Hebrides Butt of Lewis, 29th July (K D Shaw) (*British Birds* 84: 452)

1990 Lothian Musselburgh, f, dead, 9th December (M Griffin, B A Hickman *et al*) (*British Birds* 84: 452), specimen at National Museums of Scotland (NMSZ 1991.41)

Wilson's Storm-petrel
Oceanites oceanicus (4, 303)

1891 Argyll Jura, caught alive, 1st October (*Annals of Scottish Natural History* 1892: 18)

1988 Outer Hebrides Little Minch, about 5 km SE of Renish Point, Harris, 30th August (D J Britton) (*British Birds* 83: 442)

1993 Sea area Fair Isle About 50 km NW of Ramna Stacks, 61° 04' N 01° 49' W, 8th August (P V Harvey *et al*) (*British Birds* 87: 509; *Shetland Bird Report* 1993: 114)

1997 Sea area Fair Isle About 210 km NE of Unst, 61° 37' N 02°45' W, 1st June (G Leaper, R W White) (*British Birds* 93: 516)

White-faced Storm-petrel
Pelagodroma marina (1, 1)

1897 Argyll Colonsay, young female, caught alive, 1st January (*Annals of Scottish Natural History* 1897: 88), specimen at National Museums of Scotland (NMSZ 1897.17)

Swinhoe's Storm-petrel
Oceanodroma monorhis (1, 3)

2000 Northeast Scotland Cove, Aberdeen, f, trapped, 5th August (P A A Baxter, H I Scott *et al*) (*British Birds* 94: 457; *Birding Scotland* 3: 179-186)

Magnificent Frigatebird
Fregata magnificens (1, 2)

1953 Argyll Loch a' Puill, Tiree, immature f, caught alive, later died, 10th July (*British Birds* 47: 58-59), specimen at National Museums of Scotland (NMSZ 1953.16)

Frigatebird sp
Fregata sp. (1, 3)

1960 Northeast Scotland Off Forvie, Aberdeenshire, 20th August (Mrs R Maxwell, A J M Smith) (*British Birds* 55:565)

Great Cormorant
Phalacrocorax carbo

Continental European race *P c sinensis*, '**Continental Cormorant**' (?15*, -)

The following sight records have been published as "showing the characters of *P c sinensis*":

1989 Highland Loch Insh, April

1986 Borders St Abbs Head, adult, 1st April (A W Lauder) (*Borders Bird Report* 1986: 12)

1991 Borders Union Bridge, River Tweed, near Berwick, adult, 10th September (*Borders Bird Report* 1991: 14)

1994 Moray & Nairn Loch Spynie, adult, 4 April to 26 July (D M Pullan, R Smith *et al*) (*Moray & Nairn Bird Report* 1994: 89-90; *Scottish Bird Report* 1994: 11)

1996 Caithness Gills, juvenile, January (*Scottish Bird Report* 1996: 11)

1996 Caithness Thurso, adult, February (*Scottish Bird Report* 1996: 11)

1996 Moray & Nairn Loch Spynie, 2 adults, at least 5th to 12th April and 2nd June (R Proctor, P T Hirst, M J H Cook *et al*) (*Scottish Bird Report* 1996: 11); presumed one of same, Lossie estuary 28th April (R Proctor) and Gilston 8th May (R F Hewitt) (*Moray & Nairn Bird Report* 1996: 13)

1997 Moray & Nairn Lossie estuary, adult, 4th May (*Scottish Bird Report* 1997: 13)

1997 Moray & Nairn Loch Spynie, adult, 10th May (*Scottish Bird Report* 1997: 13)

1998 Moray & Nairn Lossie estuary, adult, March

1998 Moray & Nairn Loch Spynie, first winter, December to July 1999; 2 other first winters, January 1999

1999 Moray & Nairn Lossie estuary, adult, May

1999 Moray & Nairn Loch Spynie, adult, June

1999 Moray & Nairn Loch Spynie, 2 adults, December to January 2000

[1954 Lothian, Pre 1959 Dumfries & Galloway]

Swinhoe's Storm-petrel, N E Scotland 2000 *Harry Scott*

American Bittern
Botaurus lentiginosus (7, 61)

1844 Dumfries & Galloway Dinwiddie Moors, near Jardine Hall, Dumfriesshire, killed, mid-October (Yarrell 1845, pp. 546-547)

1854 Northeast Scotland Balgownie Links, near Bridge of Don, Aberdeenshire, f, shot, November (Gray 1871, p. 280), specimen at University Museum, Aberdeen

1862 Caithness Latheronwheel, killed, autumn (*Proceedings of the Royal Physical Society* 3: 182-183)

1873 Dumfries & Galloway Drumlanrig Castle, Carronbridge, Dumfriesshire, shot, 25th March (*Zoologist* 1876: 4929)

1875 Argyll Islay, shot, late October (*Proc Nat Hist Soc Glasgow* 3: 43-44)

1932 Outer Hebrides Benbecula, adult m, shot, 27th December (*British Birds* 26: 313)

1981 Clyde Glen Moss, Kilmacolm, Renfrewshire, 4th November to 9th January 1982 (D L Clugston, J Cumming *et al*) (*British Birds* 75: 485)

[Pre 1848 Ayrshire, 1853 Lothian, c1861 Lothian, 1888 Moray & Nairn]

Green Heron
Butorides virescens (1, 4)

1987 Lothian Tyninghame, first winter, freshly dead, probably killed by a fox, 25th October (D Campbell, P R Gordon *et al*) (*British Birds* 81: 542; *Lothian Bird Report* 1987: 80), specimen at National Museums of Scotland (NMSZ 1988.18.1)

Squacco Heron
Ardeola ralloides (3, 142)

Pre-1877 Lothian Dalmahoy, near Edinburgh, shot, no date (*Proceedings of the Royal Physical Society* 4: 216-217), specimen at National Museums of Scotland (NMSZ 1897.21.2)

1896 Orkney North Ronaldsay, adult m, shot, 7th September (*Annals of Scottish Natural History* 1897: 158)

1913 Outer Hebrides Near Butt of Lewis, adult m, 5th to about 12th June (*Scottish Naturalist* 1913: 211)

[1852 Clyde/Lothian]

Cattle Egret
Bubulcus ibis (3, 113)

1979 Angus & Dundee Loch of Kinnordy, 10th to 19th May (J Miles) (*British Birds* 73: 494)

1986 Dumfries & Galloway Black Parks Farm, Stranraer and Soulseat Loch, 14th October to 20th November (W Currie, R W Forrester, G Sheppard *et al*); same, Milton Lake, near Crockerford, 6th to 14th December (per R H Hogg) (*British Birds* 80: 522; *Scottish Birds* 3: 246)

1999 Shetland *M.V. Hendra*, between Mainland and Whalsay, taken into care, exhausted, 27th January (per Dr B Marshall, K Osborn *et al*); released in good health La Rocha, Portugal 18th February (*British Birds* 92: 519; *Shetland Bird Report* 1999: 93-94; *Birding Scotland* 2: 77)

Cattle Egret, Shetland 1999 *Bill Jackson*

Snowy Egret
Egretta thula (1, 1)

2001 **Argyll** Balvicar, Seil Island, age uncertain, 5th to 25th November, probably since 30th October, also in 2002 (J M Dickson, W Jackson *et al*); same **Ayrshire** Ardrossan, 22nd to 23rd December (and in 2002) and Stevenston, 26th December to 2002 (*British Birds* 95: 481-482; *Birding Scotland* 5: 10-14) [Subject to acceptance by BOURC]

Black Stork
Ciconia nigra (15*, 143)

1946 **Lothian** Near Longniddry, 29th May; same, Port Seton, 2nd June (*British Birds* 39: 344-345)

1972 **Orkney** Sandwick, 7th to 12th June (Mr & Mrs Wylie and Mrs Wylie Jnr) (*British Birds* 66: 336)

1974 **Outer Hebrides** Vallay Strand, North Uist, 26th to 30th August (J B O Rossetti *et al*) (*British Birds* 69: 362; *Scottish Birds* 11: 82-83)

1977 **Shetland** Loch of Hillwell, 3rd to 6th May (P K Kinnear *et al*); presumed same, **Highland** Brora Loch, Sutherland, 18th May (P G Ottaway) (*British Birds* 71: 490)

1977 **Moray & Nairn** Dulsie Bridge, Nairn, 17th July (N J O Graham); same, **Highland** Tomatin, Invernessshire, 18th to 22nd July (R H Dennis, Miss L Holt *et al*) (*British Birds* 73: 496)

Black Stork, N E Scotland 1998 Jim Pattinson

1980 **Perth & Kinross** Near Aberuthven, Perth, sub adult, 3rd to 8th August (A Brown, K D Shaw *et al*) (*British Birds* 74: 459)

1983 **Borders/Clyde** Biggar Water Valley, 1st to 2nd June (Mr Macgillivray, J M A Osborne *et al*) (*British Birds* 77: 512); probably same, **Lothian** Dirleton, 18th June (J & Mrs J Levene) (*British Birds* 78: 535)

1990 **Orkney** Bea Loch, Sanday, adult, 23rd to 24th June (F Muir, R Thorne) (*British Birds* 84: 458)

1990 **Dumfries & Galloway** Caerlaverock, 24th to 25th June (J B Doherty, P Shimings) (*British Birds* 85: 512)

1991 **Highland** Sanna, Ardnamurchan, formerly Argyllshire, 18th May (M Madders, P Snow, J Elstead) (*British Birds* 85: 512)

1991 **Highland** Between Avoch and Munlochy, 23rd July (C H Crooke, B Etheridge, D C Orr-Ewing) (*British Birds* 85: 512)

1991 **Outer Hebrides** Uig, Lewis, 2, 25th to about 31st July, one of same, 4th August, dead, 5th (P Cunningham, R Macintyre, F Maciver *et al*), specimen at Stornoway Museum (*British Birds* 85: 512)

1995 **Orkney** Rackwick, Hoy, 27th June (M Gray *et al*) (*British Birds* 89: 489)

1998 **Northeast Scotland** Ythan Estuary, first summer, 3rd to 19th July (Mrs S Jackson, B Marshall, H I Scott *et al*) (*British Birds* 92: 560; *Birding Scotland* 1: 175-177)

Lesser White-fronted Goose
Anser erythropus (12*, 135)

1954 **Dumfries & Galloway** Near Castle Douglas, Kirkcudbrightshire, immature, 20th February to 14th March; adult, 7th to 14th March; probably same, as 2 adults, 23rd January 1955, third adult, 3rd February 1955, 1+ stayed to 6th March (*British Birds* 48: 323-325); presumed one of same, 31st December 1955 to 12th February 1956 (*British Birds* 49: 227);

presumed same, 17th January to 25th February 1958 (D G Andrew, A Baldridge, A D Watson *et al*) and 30th January to 4th February 1959 (H G Alexander, A D Watson *et al*) (*British Birds* 53: 161, 416)

1960 Dumfries & Galloway The Merse, Wigtownshire, 27th March (D Griffiths, Miss M McKinna, D Watson) (*British Birds* 54: 182; *Scottish Birds* 1: 271-272), may have been the same individual as above

1960 Upper Forth Cambus, Clackmannanshire, adult, shot, 20th January (per T Paterson) (*British Birds* 54: 182; *Scottish Birds* 1: 272)

1974 Clyde Carnwath, Lanarkshire, adult, 6th February (K C R & Mrs H S C Halliday) (*British Birds* 68: 314)

1978 Dumfries & Galloway Caerlaverock, 2 adults, 19th February (T Francis, J Selwyn) (*British Birds* 72: 512)

1980 Argyll Bridgend, Loch Indaal, Islay, 15th March (G W & R Follows) (*British Birds* 74: 459)

1986 Argyll Near Bridgend, Islay, adult, 11th to 15th March (Dr M A Ogilvie *et al*) (*British Birds* 81: 545)

1989 Angus & Dundee Menmuir, adult, at least 13th to 14th December (M Andrews *et al*) (*British Birds* 84: 459)

1996 Dumfries & Galloway Glencaple, adult, 2nd to 3rd January (D Patterson, P Williams *et al*) (*British Birds* 90: 461)

[**2000 Dumfries & Galloway** Mersehead, 11th to 27th January (S Bearhop, M A Maxwell, S C Votier *et al*), was from Swedish reintroduction scheme (*British Birds* 94: 459-460)]

[1894 Dumfries & Galloway, 1956 Dumfries & Galloway]

Snow Goose

Anser caerulescens

Greenland and Baffin Island race *A c atlanticus*, '**Greater Snow Goose**' (2+, -)

1921 Dumfries & Galloway Near Castle Douglas, immature, shot, 18th February, from flock of 5 Snow Geese ssp which arrived in autumn 1920 and overwintered (Bannerman 1957, vol 6, p 252)

1954 Lothian Gladhouse Reservoir, adult, found dead, 4th January (*Edinburgh Bird Bulletin* 4: 33; *Scottish Naturalist* 66: 14, 68: 4)

Also the following sight records have been assigned to this race, but which may not have been assessed by a rarities committee:

1960 Clyde Libberton, Lanarkshire, 4th March (*Scottish Birds* 1: 272-274); presumed same **Lothian** Fala Moss, 15th October to 4th March 1961 and **Borders** Hule Moss 9th November (*Scottish Birds* 1: 425); presumed same, at various localities in **Clyde/Borders/Lothian** in winter of 1961/62 (*Scottish Birds* 2: 203)

Red-breasted Goose, Perth & Kinross 2001 *Jim Duncan*

1985 Highland Ardmore and Loch Eye, "regular" adult, 22nd February to 2nd April (S J Aspinall, R H Dennis, A D Fox, C G Headlam); presumed same, Nigg, 19th to 21st November (S J Aspinall) (*Scottish Birds* 14: 97)

1985 Lothian Aberlady, Dirleton and Fenton Barns, adult, 18th January to 2nd February (I R Hamilton, K C Hamilton, P R Gordon *et al*); same, over West Barns, 2nd February (A J Clunas); same, Lochhouses, 2nd and 3rd February (A Brown, G Anderson *et al*) (*Scottish Birds* 14: 97)

1988 Lothian Congalton and Aberlady, adult, 11th to 13th December (I J Andrews, M Griffin *et al*) (*Scottish Bird Report* 1988: 12)

Brent Goose
Branta bernicla

North American and East Siberian race *B b nigricans*, '**Black Brant**' (1, 121)

1989 Argyll Loch Gruinart, Islay, adult, 30th November to at least 23rd February 1990[1] (R H Hogg, Dr M A Ogilvie *et al*) (*British Birds* 87: 513) [[1] Argyll Bird Reports 1989 & 1990 and *Scottish Bird Report* 1994 give dates as 20th October 1989 to 17th May 1990]

Red-breasted Goose
Branta ruficollis (12, 68)

1957 Highland Beauly Firth, Inverness shire, 20th January, probably since late September 1956 (*Scottish Naturalist* 1957: 118)

1991 Dumfries & Galloway Caerlaverock, first winter, 2nd October to 1992, then Mersehead to 7th March 1992 (P N Collin *et al*) (*British Birds* 86: 459); presumed same, Caerlaverock, as adult, 5th October to 7th November 1992; same, near Dumfries, 10th to 18th November 1992; same, Caulkerbush and Mersehead, 18th November to 31st December 1992; same, Southwick, 1st January 1993; same, Mersehead, 2nd and 4th January 1993; same, Caulkerbush, 8th to 10th January 1993; same, Caerlaverock, 10th to 11th February 1993, 25th September to 24th November 1993, 30th December 1993 to 21st February 1994, 28th March to 2nd April 1994

1994 Highland Insh Marshes, adult, 9th to 19th March (J Gordon *et al*); same, **Highland** Nethybridge, 22nd March to 4th April (per C H Crooke) (*British Birds* 89: 491)

1994 Perth & Kinross Vane Farm, adult, 28th September (J Burrow, D J Fairlamb, A W Lauder *et al*) (*British Birds* 90: 461)

1994 Clyde Endrick Mouth, Dumbartonshire, 5th December (D C Orr-Ewing) (*British Birds* 88: 501)

1998 Perth & Kinross Vane Farm and Gellybank, adult, 31st March to 15th April (G & W Brown, I Munroe *et al*) (*British Birds* 92: 563)

1998 Northeast Scotland Loch of Strathbeg, adult, 1st to 18th April (D C Butcher, P & R A Schofield *et al*) (*British Birds* 92: 563)

1998 Perth & Kinross Kercock, adult, 13th December (E D Cameron) (*British Birds* 92: 563)

2000 Moray & Nairn Near Kinloss, 21st to 31st October (R F Hewitt *et al*) (*British Birds* 94: 460)

2001 Perth & Kinross Balgedie/Loch Leven, adult, 21st to 23rd January (A Whewell *et al*); same, **Perth & Kinross/Fife** Powmill area, 26th January to end of April (I Munro, A W Reid, K D Shaw, D E Dickson *et al*) (*British Birds* 95: 484)

2001 Angus & Dundee Montrose Basin, 29th March to 8th April (G M Addison *et al*) (*British Birds* 95: 484)

2001 Argyll Loch Gruinart, Islay, adult, 27th October to 10th November (A W Reid) (*British Birds* 95: 484)

[1818 Northumberland, Pre 1840 Caithness, Pre 1852 Northeast Scotland, 1880 Shetland]

Ruddy Shelduck

Tadorna ferruginea (34* [2 records], -)

1892 Highland Durness, Sutherland, 29 (in 3 separate flocks of 14, 10 & 5), 20th June to first week of July, 1 (from flock of 5) injured, 20th June, kept in captivity, died, 13th July (*Zoologist* 3rd Series 16: 392-398)

1892 Moray & Nairn Mouth of the River Findhorn, flock of 5, 6th to end of July, f shot 6th.

Only the 1892 records are acceptable under Category B. Other records, of which there are many, are considered most likely to be escapes, although no review has been undertaken.

[1831 Orkney, Pre 1840 Caithness, 1868 Outer Hebrides, 1872 & 1887 Angus & Dundee, 1909 Caithness, 1909, 1932, 1966 Orkney, 1923–24 Lothian]

American Black Duck

Anas rubripes (7, 25)

1979 Clyde Stanley Dam, Paisley, Renfrewshire, adult m, 22nd to 28th December (D L Clugston *et al*) (*British Birds* 73: 499; *Scottish Birds* 11: 223)

1981 Highland North Kessock, Ross/Inverness shire, m, 11th October to 2nd March 1982; returned 7th to 12th August 1982 (*British Birds* 75: 491)

1985 Lothian Tyninghame, f, 9th February to 23rd May, 20th July, 31st August; same, 8th February to 27th April 1986 (A Brown, A J Clunas, P R Gordon *et al*) (*British Birds* 79: 536; *Lothian Bird Report* 1985: 109)

1989 Clyde Barr and Castle Semple Lochs, Lochwinnoch, Renfrewshire, first winter m, 26th November to 6th March 1990 (A A Murray, J J Sweeney *et al*) (*British Birds* 83: 450)

1990 Shetland Loch of Spiggie, m, 4th February to 29th April (R L Howells, M Mellor *et al*) (*British Birds* 84: 461)

1997 Highland Alturlie, Invernessshire, f, 14th January (I Dillon), present 13th January to 1st April (*British Birds* 92: 564)

2001 Argyll Loch A'Phuill, Tiree, m, 15th June (J Bowler, A J Leitch) (*British Birds* 95: 486)

Ferruginous Duck

Aythya nyroca (13*, 261 since 1958)

1855 Lothian Near Musselburgh, Midlothian, adult male, shot, shortly before 26th December (*Proceedings of the Royal Physical Society* 1: 52)

1929 Borders River Tweed at Melrose, Roxburghshire, pair, 17th February, stayed for 2 or 3 days (*Scottish Naturalist* 1929: 86)

1931 Northeast Scotland River Don, near Donmouth, m, 22nd November (*Scottish Naturalist* 1932: 58)

1973 Lothian Duddingston Loch, Edinburgh, m, 25th February to 17th March (D R Anderson); presumed same, 2nd to 7th March 1974 (D J Bullock) and 27th October to 23rd November 1974 (D R Anderson, P Hodd) (*Scottish Birds* 8: 224, 411)

1976 Borders Stobs Upper Loch, Roxburghshire, m, 13th to 20th November (D B McGinn) (*Scottish Birds* 10: 84)

1977 Northeast Scotland Loch of Strathbeg, f, 12th to 23rd March (P M Ellis *et al*); presumed same 20th November and 18th December (J Dunbar) (*Scottish Birds* 10: 122)

1979 Highland Kinloch, Rhum, Inverness-shire, immature m, found exhausted, 16th October (J A Love *et al*) (*Scottish Bird Report* 1979: 18)

1981 Orkney Birsay, m, 24th May (G T & Mrs M Wylie) (*Scottish Bird Report* 1981: 20)

1982 Clyde Possil Marsh, Glasgow, m, 21st December (G J Brock) (*Scottish Bird Report* 1982: 18)

1987 **Ayrshire** North Craig Reservoir and Craufurdland, Kilmarnock, first year m, 21st to 26th October (W A Davidson *et al*) (*Scottish Bird Report* 1987: 15)

1988 **Lothian** Edgelaw Reservoir, Midlothian, adult m, 29th to 30th October (L L J Vick) (*Scottish Bird Report* 1988: 15)

1992 **Lothian** Winchburgh Quarry, m, 25th January; same, Humbie Reservoir, West Lothian, 26th January to 1st February; same, Winchburgh Quarry, 17th to 18th February (G J Fitchett *et al*) (*Scottish Bird Report* 1992: 16)

[Pre 1848 Orkney, Pre 1852 Lothian, 1854 Orkney, 1857 Angus & Dundee/Fife, Pre 1880 Northeast Scotland, 1898 Highland]

Lesser Scaup

Aythya affinis (14*, 47)

1990 **Dumfries & Galloway** Milton Loch, m, 29th December (R Hesketh *et al*); same, Auchenreoch Loch, 31st to 25th January 1991 (I Murray *et al*) (*British Birds* 85: 516; *Birding World* 4: 29)

1993 **Shetland** Loch of Spiggie, first year m, 9th to 13th May (M Mellor *et al*) (*British Birds* 87: 516; *Shetland Bird Report* 1993: 115)

Lesser Scaup, Highland 2002 *Harry Scott*

1996 **Caithness** St John's Loch, m, 1st to 17th February, 25th to 10th March; presumed same, 28th December to 20th January 1997; same, Loch Watten, 18th to 19th February (E W E Maughan, N Money, J Smith *et al*) (*British Birds* 90: 464)

1997 **Ayrshire** Martnaham Loch, m, 13th to 17th September (B Orr *et al*) (*British Birds* 91: 467; *Ayrshire Bird Report* 1997: 76-78; *Birding Scotland* 1: 167-170)

1998 **Shetland** Loch of Spiggie, 3, first-winter m, 2 first winter ff, 1st November to 1st December, first winter m and first winter f to 2nd (P M Ellis, M Mellor, J D Okill *et al*) (*British Birds* 92: 567; *Shetland Bird Report* 1998: 89-90)

1998 **Argyll** Ardnave Loch, Islay, first winter f, 6th November to 9th January 1999 (C Bradshaw, A J Leitch *et al*) (*British Birds* 92: 566); presumed same, Loch Gruinart, Islay, 15th December (C R McKay, per P Daw) (*British Birds* 94: 465)

1998 **Orkney** Loch of Tankerness, f, 7th December to 10th January 1999 (K E Hague *et al*) (*British Birds* 92: 566)

1999 **Caithness** St John's Loch, first winter m, 11th and 25th January (J Corbett, J Smith) (*British Birds* 93: 523)

1999 **Ayrshire** Munnoch Reservoir, m, 9th to 10th May (S C Votier *et al*); presumed same, **Clyde** Linwood Pool, 12th May (A Carroll *et al*); presumed same, **Clyde** Balgray Reservoir, 29th to 30th May (J J Sweeney *et al*) (*British Birds* 93: 523-524; *Ayrshire Bird Report* 1999: 71-73)

1999 **Perth & Kinross** Vane Farm, first summer m, 10th and 12th May (P M Brooks, A W Lauder, K D Shaw *et al*) (*British Birds* 93: 524)

2000 **Orkney** Loch of Harray, f, 20th February to 30th March (I Dillon, K Fairclough, E R Meek) (*British Birds* 94: 465)

2001 **Caithness** St John's Pool, Brough, m, 23rd June (C Jones, J Smith) (*British Birds* 95: 488)

Common Eider

Somateria mollissima

Northern race *S m borealis* (1, 1)

1978 Lothian Musselburgh, adult m, freshly dead, 9th February[1] (G F Miller, D S Raines), specimen at Kelvingrove Museum, Glasgow[1] (*British Birds* 75: 494) [[1]not 2nd September or National Museums of Scotland, Edinburgh as published in *British Birds* (Dr B Zonfrillo, pers comm)]

A tide line corpse, therefore included in Category D.

Steller's Eider

Polysticta stelleri (13*, 14)

1947 Orkney Wide Firth, Gairsay, 2, adult m and immature m, 5th, 12th and 19th January (*British Birds* 40: 253)

1949 Orkney Sandside Bay, Deerness, Mainland, m, 13th November (*Scottish Naturalist* 1950: 57-58)

1959 Highland Loch Fleet, Sutherland, f/immature m, 22nd September (P Glazier, D Jenkins *et al*) (*British Birds* 54: 177; *Scottish Birds* 1: 234)

1970 Northeast Scotland Rattray Head, Aberdeenshire, m, 8th November (M R Williams) (*British Birds* 64: 347; *Scottish Birds* 6: 444)

1971 Fair Isle f, 9th May to 13th June (R A Broad, G J Jobson, I S Robertson *et al*) (*British Birds* 65: 329)

1972 Outer Hebrides Vorran Island, South Uist, m, May to August; same, Dremisdale, 22nd November to 1973 (R Jones, Mrs M E Lacey, J M O'Sullivan *et al*) (*British Birds* 66: 338; *Scottish Birds* 7: 202-203); same, South Uist all 1973-74, summers of 1975-78, 27th to 28th February 1979, all 1980, January to 31st October 1981, all 1982-83 and 1984, until last seen on 12th August 1984

1974 Outer Hebrides Vorran Island, South Uist, 2 ff, 13th April (D Waring *et al*) (*British Birds* 68: 313)

1974 Orkney Westray, immature m, 25th October to at least 14th November (R H Dennis, R Hastings) (*British Birds* 68: 313); same, between Westray and Papa Westray, as m, 14th July 1978; Papa Westray, 2nd to 19th June 1979; North Wick, Papa Westray, 29th April to late August 1980; Papa Westray and Westray, 7th May to 24th June 1981; Papa Westray, 30th April to 1st July 1982

1976 Orkney North Ronaldsay, f, 16th to 17th April (R J D Broadhurst, A R Swanney) (*British Birds* 70: 417)

1996 Shetland Fetlar, m, wing only, 31st March (D Houghton, D Suddaby *et al*) (*British Birds* 90: 465)

2000 Moray & Nairn Hopeman, f, 16th to 18th November (D M Pullan *et al*) (*British Birds* 94: 466; *Birding World* 13: 458-459; *Birding Scotland* 4: 36-38)

Steller's Eider, Moray & Nairn 2000 Adrian Webb

Harlequin Duck

Histrionicus histrionicus (9*, 15)

1931 Outer Hebrides Near Berneray, Sound of Harris, m, 13th February (*British Birds* 24: 370)

1954 Borders River Teviot at Barnhills, Denholm, Roxburghshire, immature m, shot, 16th January (*Scottish Naturalist* 1954: 15-16)

1965 Fair Isle m and f, 11th January to 2nd February (G Barnes, J A Stout, J Wilson); presumed same, **Caithness** Wick, m and f, 18th April to 1st May (G Gunn, Dr I D Pennie, R S Shand *et al*) (*British Birds* 59: 286; *Scottish Birds* 4: 83)

1987 Shetland Sullom Voe, first winter m, 16th January to 25th February (J N Dymond, M Heubeck *et al*) (*British Birds* 81: 549)

1987 Argyll Claggain Bay, Islay, f, 20th to 31st October (M Porteous, members of Edinburgh YOC Group *et al*) (*British Birds* 81: 549)

1991 Caithness Wick, f, 6th February to 17th May (M Harvey, D C Orr-Ewing, J Porter *et al*) (*British Birds* 85: 519)

1996 Ayrshire Girvan, 2 first summer ff, 13th to 27th April (C J Murphy *et al*) (*British Birds* 90: 466; *Ayrshire Bird Report* 1996: 72)

1999 Fair Isle m, age uncertain, 15th October (C A Holt *et al*) (*British Birds* 93: 525)

[Pre ?1806 Scotland, Pre 1841 Caithness, Pre 1845 Orkney, 1851 Northeast Scotland, 1858 Northeast Scotland, 1931 Outer Hebrides, 1933 Shetland, 1937 Orkney, 1954 Argyll, 1955 Shetland]

Black Scoter

Melanitta nigra

North American and East Siberian race *M n americana* (3, 6)

1987 Lothian Gosford Bay, m, 31st December to 1st January 1988 (A Brown) (*British Birds* 81: 549; *Lothian Bird Report* 1988: 86); presumed same, Gosford Bay, 14th March 1989 (P R Gordon); presumed same, Gullane Point, 22nd November 1989 (P R Gordon) (*British Birds* 83: 455)

1989 Moray & Nairn Culbin Bar, m, 22nd January to 8th February, 11th December (P G Akers) (*British Birds* 83: 455); **Highland** Dornoch, at least 15th April 1990 (R J Evans *et al*) (*British Birds* 87: 517); Embo and Dornoch, 23rd March to 2nd May 1991 (P J Benstead, W J Brame, L Cox *et al*) (*British Birds* 87: 518); Dornoch, 11th December 1991 (D M Pullan, I T Rowlands) (*British Birds* 87: 518); **Moray & Nairn** Findhorn Bay, 29th to 31st October 1992 (B Robson *et al*) (*British Birds* 92: 567); Burghead Bay, at least 8th December 1992 (R J Evans *et al*) (*British Birds* 87: 518); Findhorn, 23rd February 1993 (R J Evans) (*British Birds* 88: 504); **Highland** Dornoch, 6th to 7th March, 4th, 21st April 1993 (I A MacDonald per A Vittery; S Blamire, D M Pullan) (*British Birds* 87: 517, 88: 504); **Moray & Nairn** Burghead, 12th March 1993 (M C Dennis *et al*) (*British Birds* 88: 504)

1989 Dumfries & Galloway Loch Ryan, m, 16th February (P M Hill, J M Mottishaw) (*British Birds* 84: 463)

Bufflehead

Bucephala albeola (1, 8)

1980 Outer Hebrides West Loch Bee, South Uist, m, 14th to at least 18th March (D J R Counsell, L Gardiner, J J Gordon *et al*) (*British Birds* 74: 464)

[1841 Orkney, Pre 1854 Northeast Scotland, 1865 Northeast Scotland, 1870 Western Isles]

Barrow's Goldeneye

Bucephala islandica (1, 1)

1979 Ayrshire Irvine, adult m, 4th November to 28th December (Dr J T Knowler *et al*) (*British Birds* 76: 528, 85: 519-520, 88: 104-106; *Birding Scotland* 5: 50-51)

[1913 Shetland]

Black Kite
Milvus migrans (16, 304)

1901 **Northeast Scotland** Near Aberdeen, Aberdeenshire, m, shot, 14th or 16th April (*Annals of Scottish Natural History* 1901: 133)

1966 **Orkney** Harray, 18th to 19th May (E Balfour); same, **Shetland** Sumburgh, 27th May to 2nd June (M Carins, G D Joy, M J McVail *et al*) (*British Birds* 60: 315; *Scottish Birds* 4: 295)

1968 **Orkney** Rousay, 15th May (E Balfour) (*British Birds* 62: 466; *Scottish Birds* 6: 38-39)

1970 **Orkney** North Ronaldsay, adult, 28th September (Prof M F M Meiklejohn) (*British Birds* 64: 348; *Scottish Birds* 6: 331-332)

1974 **Moray & Nairn** Cabrach, Banffshire, 14th July (D Russell) (*British Birds* 73: 502)

1975 **Orkney** Eday, 3rd May (R D Lowe) (*British Birds* 69: 333)

1976 **Outer Hebrides** North Rona, 26th to 30th June (M A S Beaman, P G H Evans *et al*) (*British Birds* 71: 496)

1979 **Northeast Scotland** Loch of Strathbeg, 30th May (J Dunbar) (*British Birds* 73: 502)

1987 **Dumfries & Galloway** Lochanhead, 28th August (G, P & S Roxley) (*British Birds* 81: 551)

1989 **Orkney** Birsay, 14th June (M Gray, I Higginston *et al*); same, Finstown, 14th (E J Williams) (*British Birds* 83: 456)

1994 **Ayrshire** Pinwherry, 6th June (P McEwen, A Stevenson) (*British Birds* 88: 504; *Ayrshire Bird Report* 1994: 67-68)

1995 **Lothian** Belhaven Bay, 7th April (C N Davison, K Gillon) (*British Birds* 89: 495; *Lothian Bird Report* 1995: 111)

1997 **Orkney** North Ronaldsay, 2nd to 13th May (M Gray *et al*); same, **Shetland** Kergord, Scalloway and Mid Yell area, 15th May to at least 18th August (P M Ellis, J Mitchell *et al*) (*British Birds* 91: 470)

1997 **Argyll** Vaul, Tiree, 16th May (C R McKay) (*British Birds* 93: 526)

1997 **Dumfries & Galloway** Loch Ryan, 9th August (C Baines) (*British Birds* 91: 470)

1999 **Orkney** North Ronaldsay, 14th May (P A Brown *et al*) (*British Birds* 95: 489)

Pallid Harrier
Circus macrourus (5, 11)

1931 **Fair Isle** second year m, shot, 24th April to 8th May (*Scottish Naturalist* 1932: 1), specimen at National Museums of Scotland (NMSZ 1931.127.1)

1993 **Perth & Kinross** Near Aberfeldy, m, probably second summer, 5th to 7th May (J Craib, R Etheridge, Mrs W Mattingley) (*British Birds* 88: 505; *Ibis* 140: 182). This bird displayed to a female Hen Harrier (*British Birds* 89: 73)

1993 **Shetland** Exnaboe area, juvenile, 15th to 16th September (D & J Coutts, J N Dymond, H R Harrop, M Mellor *et al*) (*British Birds* 88: 505; *Scottish Birds* 17: 174; *Shetland Bird Report* 1993: 118-119; *Birding World* 6: 397)

1995 **Orkney** Dunkadale area, second summer m, 18th April to 27th June; also, 13th September and possibly November (K Fairclough, E R Meek *et al*) (*British Birds* 89: 496; *Orkney Bird Report* 1995: 67-68; *Birding World* 8: 253-255). This bird was paired to a female Hen Harrier; clutch of 5 eggs laid, but eggs disappeared, probably taken by a predator (*British Birds* 91: 430)

2001 **Shetland** Brow Marsh, juvenile, 8th to 15th September (P V Harvey, B Marshall, R Riddington *et al*) (*British Birds* 95: 490)

[1942 Fair Isle, 1949 Fair Isle]

Lesser Kestrel
Falco naumanni (2, 17)

1897 **Northeast Scotland** Boyndlie, Aberdeenshire,

f, shot, 25th October (*Annals of Scottish Natural History* 1898: 51)

1987 **Fair Isle** m, 23rd June (A G Pitches, N J Riddiford *et al*) (*British Birds* 81: 551)

American Kestrel

Falco sparverius (1, 2)

1976 **Fair Isle** m, 25th to 27th May, *F s sparverius* (R A Broad, the late R A Richardson, M Taylor *et al*) (*British Birds* 71: 496, 74: 199-203; *Scottish Birds* 10: 90)

Eleonora's Falcon

Falco eleonorae (1, 4)

1985 **Outer Hebrides** Bornish, South Uist, m, 14th June (Dr D B Jackson, T J & Mrs C Stowe) (*British Birds* 83: 459)

Sora

Porzana carolina (3, 12)

1901 **Argyll** Tiree, male, shot, 25th October (*Bulletin of the British Ornithologists' Club* 12: 26)

1913 **Outer Hebrides** Near Ness, Lewis, immature m, shot, 12th November (*British Birds* 7: 202-203)

1982 **Shetland** Foula, adult, 30th October (Mrs F Ratter) (*British Birds* 77: 520)

Little Crake

Porzana parva (5, 99)

1852 **Moray & Nairn** River Isla, Thornton, Banffshire, adult m, found dead, 12th March (*Zoologist* 1860: 6968), specimen at Norwich Castle Museum (1935.15.66)

1909 **Ayrshire** Girvan Harbour, caught exhausted on a boat, 29th March, later collected (*Annals of Scottish Natural History* 1909: 185)

1911 **Argyll** Near Loch Scamadale, caught, 29th September (*Scottish Naturalist* 1912: 20)

1959 **Shetland** Uyeasound, Unst, m, picked up dead on the shore, April (S T Saxby) (*British Birds* 53: 417; *Scottish Birds*: 235), specimen at National Museums of Scotland (NMSZ 1966.56)

1970 **Fair Isle** m, trapped, 11th May (R H Dennis, Dr B Marshall *et al*) (*British Birds* 64: 349; *Scottish Birds* 6: 277)

[1952 Lothian]

Baillon's Crake, Shetland 2001 *Hugh Harrop*

Baillon's Crake

Porzana pusilla (6, 15 since 1958)

1835 **Dumfries & Galloway** Near Lochmaben, Dumfriesshire, shot, summer (*Naturalists' Library* 12: 336)

1893 **Clyde** Lochwinnoch, Renfrewshire, hit wires, mid May (*Annals of Scottish Natural History* 1897: 123-124)

1910 **Caithness** Near Halkirk, f, shot, 21st August (*Annals of Scottish Natural History* 1911: 140)

1929 **Fair Isle** f, obtained, 11th May (*Scottish Naturalist* 1929: 91), specimen at National Museums of Scotland (NMSZ 1929.7)

1991 **Fair Isle** juvenile f, trapped, 28th September, found dead 2nd October (S J M Gantlett, P V Harvey, D Suddaby *et al*), now in D Suddaby collection (*British Birds* 85: 522; *Scottish Birds* 16: 211)

2001 Shetland Maywick, juvenile, caught exhausted, 18th October, released in good health, 19th (H R Harrop, D Parham *et al*) (*British Birds* 95: 491)

[1844 Highland, Pre 1840 Caithness, 1889 Fife, Pre 1891 Dumfries & Galloway, 1898 Caithness]

Sandhill Crane

Grus canadensis (2, 3)

1981 Fair Isle first summer, 26th to 27th April (D G Borton, N J Riddiford, I S Robertson) (*British Birds* 75: 498, 76: 105-109)

1991 Shetland Exnaboe, first winter moulting to second winter, 17th to 25th September; same, Sumburgh, 26th (M Davison, P M Ellis *et al*) (*British Birds* 85: 522)

Little Bustard

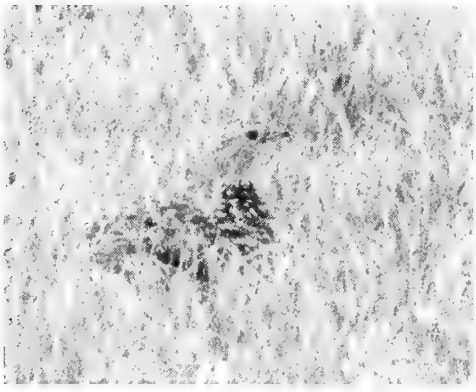
Tetrax tetrax (11, 110)

1833 Angus & Dundee Near Montrose, Angus, killed, 20th December (Gray 1871, p. 249)

1840 Fife Near St Andrews, f, shot, 6th March (Macgillivray 1852, iv, p. 39)

1848 or 1849 Caithness Near Halkirk, f, shot, mid June (Harvie-Brown & Buckley 1887, pp. 209-211)

1861 Moray & Nairn Westfield, near Elgin, Morayshire, f, obtained, 8th February (Gray 1871, pp. 249-250), now at Elgin Museum



Little Bustard, Shetland 1998 *Bill Jackson*

1873 Northeast Scotland Fingask, Oldmeldrum, Aberdeenshire, f, shot, 13th November (*Scottish Naturalist* 2: 204)

1912 Northeast Scotland Gallaton, near Stonehaven, Kincardineshire, f, shot, 1st January, present for c2 weeks (*Scottish Naturalist* 1912: 44-45), specimen at National Museums of Scotland (NMSZ 1960.49.3)

1935 Northeast Scotland Mill of Rora, near Peterhead, Aberdeenshire, f, shot, 3rd January (*Scottish Naturalist* 1935: 102)

1964 Dumfries & Galloway Kidsdale Farm, Luce Bay, Wigtownshire, m, 29th April (F W Champion, R Nicholson) (*British Birds* 58: 359; *Scottish Birds* 3: 253)

1989 Orkney North Ronaldsay, m, 23rd May (P J Donnelly) (*British Birds* 83: 459)

1994 Fair Isle m, 5th to 6th November (Mrs E A Riddiford, Dr R Riddington, N C Ward *et al*) (*British Birds* 88: 508)

1998 Shetland Ringasta area, Sumburgh, f, 4th to 6th October, when flew into wires and taken into care injured, died 8th (A Fitchett *et al*) (*British Birds* 92: 569; *Shetland Bird Report* 1998: 90-91), specimen at National Museums of Scotland (NMSZ 1998.164)

[1861 Moray & Nairn, 1889 Northeast Scotland]

Macqueen's Bustard

Chlamydotis macqueenii (1, 5)

1898 Northeast Scotland St Fergus, Aberdeenshire, immature f, shot, 24th October (*Annals of Scottish Natural History* 1899: 51, 73)

Great Bustard

Otis tarda (6 since 1800, 20 since 1958)

Pre-1526 Borders 'a few bred on the Merse in Berwickshire' (Gray 1871)

1876 Orkney Holland, Stronsay, adult f, shot, 29th March (*Zoologist* 1876: 4927-4928)

1892 Orkney Housebay, Stronsay, f, 6th to

8th February, shot 8th (*Annals of Scottish Natural History* 1892: 138), specimen at National Museums of Scotland (NMSZ 1897.16)

1895 **Ayrshire** Irvine, f, considerably decomposed corpse washed up, 20th June (*Annals of Scottish Natural History* 1895: 253)

1924 **Orkney** Newark Farm, Sanday, immature f, caught, 4th January and held until 20th February, when it died (*Scottish Naturalist* 1924: 89)

1936 **Shetland** Hillswick, Mainland, f, shot, 19th May (*Scottish Naturalist* 1937: 31)

1970 **Fair Isle** adult f, 11th January, caught 16th January and released 24th February; it was caught again on 5th March and kept in captivity until 6th April when it was taken to a wildlife park in Buckinghamshire (G J Barnes, R H Dennis, E Stout *et al*) (*British Birds* 64: 349; *Scottish Birds* 6: 171)

[Pre 1684 Lothian, 1793 Angus and Dundee, 1803 Moray & Nairn, Pre 1844 Moray & Nairn, 1861 Highland]

Black-winged Stilt
Himantopus himantopus (9*, 292)

Pre-1684 Dumfries & Galloway "A lake near Dumfries", Dumfriesshire, shot, no date (Sibbald 1684, pt 2, book 3, p 18)

1850 **Clyde** Near Port Glasgow, shot, no date (Gray 1871, p 303)

1920 **Dumfries & Galloway** Loch Ryan, Wigtownshire, adult, 17th October (*British Birds* 14: 164)

1953 **Highland** Ardgay, Sutherland, no date; presumed same, Gordonbush, Brora, Sutherland, 20th April (*Scottish Naturalist* 1955: 102)

1958 **Clyde** Near Erskine Ferry, Renfrewshire, 5th October (P R Campbell) (*British Birds* 53: 165; *Scottish Birds* 1: 72)

1984 **Northeast Scotland** Ythan Estuary, first winter, 14th October (I Macleod); same, Meikle Loch, 16th October to 3rd November (R Proctor *et al*); remains found, Cotehill Loch, mid November (per Dr M V Bell) (*British Birds* 78: 542)

Black-winged Stilt, N E Scotland 1984
Mark Tasker

1986 **Borders** St Abbs Head, adult f, 26th May (P R Gordon, K J Rideout, C K Robeson) (*British Birds* 80: 533)

1990 **Outer Hebrides** Howmore, South Uist, 2, 5th July (M Wills) (*British Birds* 86: 476)

[Undated old record Banff, Pre 1684 Dumfries (second bird), 1793 Perth & Kinross, Pre 1812 Angus & Dundee, 1814 Orkney, Pre 1836 Highland, Pre 1843 Shetland, 1867 Northeast Scotland, 1867 Clyde, 1867 Dumfries & Galloway, 1920 Highland, 1934 Shetland]

Cream-coloured Courser
Cursorius cursor (5*, 33)

1868 **Clyde** Cleghorn, near Lanark, Lanarkshire, m, shot, 8th October (*Zoologist* 1868: 1459), specimen at National Museums of Scotland (NMSZ 1954.43)

1949 **Clyde** Near Luggiebank, Lanarkshire, 3, 10th October (*Scottish Birds* 5: 28-29)

1965 **Lothian** Gullane Point, 9th to 21st October (D Baty, I Robertson, G Waterson *et al*) (*British Birds* 59: 290; *Scottish Birds* 4: 230-232)

Collared Pratincole
Glareola pratincola (7, 85)

1812 Shetland Baltasound, Unst, shot, 16th August (Bullock 1813)

1899 Angus & Dundee Mill Burn, Rocksands, Montrose, Angus, immature, shot, 4th November (*Annals of Scottish Natural History* 1900: 51)

1908 Outer Hebrides Eilean Mór, Flannan Isles, adult f, obtained, 13th July (*Annals of Scottish Natural History* 1908: 256), specimen at National Museums of Scotland (NMSZ 1908.13)

1963 Orkney Near Widewall Bay, South Ronaldsay, 6th October (H McKenzie) (*British Birds* 59: 300; *Scottish Birds* 4: 90)

1971 Fair Isle 2nd June (T Boothroyd, R A Broad, I S Robertson *et al*) (*British Birds* 65: 335; *Scottish Birds* 7: 259)

1973 Caithness Loch of Mey, 4th August (S Laybourne) (*British Birds* 67: 325)

1974 Shetland Belmont, Unst, adult, 2nd July (G Bundy) (*British Birds* 68: 319)

Three sight records (1923, 1934 and 1935) listed by Baxter & Rintoul (1953) as Collared Pratincole should probably be demoted to pratincole spp (see below) as the possibility of Black-winged Pratincole was not completely ruled out [K Osborn, M Cook pers comm].

Killdeer, Upper Forth 1983 *David W Burns*

Black-winged Pratincole
Glareola nordmanni (3, 35)

1927 Fair Isle f, 18th May, secured 19th (*Scottish Naturalist* 1927: 111), specimen at National Museums of Scotland (NMSZ 1927.75)

1976 Northeast Scotland Loch of Strathbeg, Aberdeenshire, 11th July (R Cardno, S Cutts, J Dunbar) (*British Birds* 71: 498; *Scottish Birds* 10: 314-315)

1996 Angus & Dundee Monikie, juvenile, 14th to 16th August (R McCurley, G M Smith *et al*) (*British Birds* 90: 468)

Pratincole spp
Glareola spp. (5, 105)

1923 Moray & Nairn Loch Spynie, Moray, 17th August (*Scottish Naturalist* 1924: 9)

1934 Fair Isle May (*Scottish Naturalist* 1936: 63-64)

1935 Fair Isle May (*Scottish Naturalist* 1936: 63-64)

1972 Northeast Scotland Meikle Loch, Aberdeenshire, 12th August (R H Hogg) (*British Birds* 71: 498)

1987 Shetland Uyeasound, Unst, 25th May (I Spence) (*British Birds* 81: 555)

Killdeer
Charadrius vociferus (9, 44)

1867 Northeast Scotland Peterhead, Aberdeenshire, shot, no date, identified at Aberdeen University Museum (*Annals of Scottish Natural History* 1904: 247)

1983 Upper Forth Bo'ness, formerly West Lothian, 16th January to 20th March (D E Dickson, R Shand *et al*) (*British Birds* 77: 521; *Birding Scotland* 5: 39-40)

1983 Outer Hebrides Askernish, South Uist, first winter, 30th December to 7th January 1984 (W A K Neill *et al*) (*British Birds* 77: 521); same, Kilvaley, South Uist, 22nd January 1984 (P R Boyer) (*British Birds* 79: 544)

1984 **Argyll** Colonsay, 7th to 8th January (D C Jardine, R Pitts) (*British Birds* 80: 534)
1984 **Ayrshire** Portencross, 21st January (C Campbell) (*British Birds* 78: 544)
1990 **Outer Hebrides** Eoligarry, Barra, 10th October (A Stewart) (*British Birds* 86: 476)
1991 **Outer Hebrides** Balranald, North Uist, at least 5th May (N Briden, N & Mrs R Lester, Dr P B & Mrs J A Maxted *et al*) (*British Birds* 85: 522)
1993 **Shetland** Loch of Hillwell and Brake area, 13th to 20th March (A Fitchett, D Suddaby *et al*) (*British Birds* 87: 522; *Shetland Bird Report* 1993: 120)
1995 **Northeast Scotland** Loch of Strathbeg, 13th to 15th April (W Dunlop, Mrs K Mowat, P Webster *et al*) (*British Birds* 89: 498)

Kentish Plover

Charadrius alexandrinus (13, -)

1949 **Fair Isle** probable f, 14th May (*Scottish Naturalist* 1950: 24-25)
1962 **Northeast Scotland** Ythan Estuary, 3rd to 4th May (A G Gordon, W E Pool) (*British Birds* 56: 399; *Scottish Birds* 2: 246)
1966 **Fife** Elie Bay, 21st April (E Hutchison, J J C Hardey) (*Scottish Birds* 4: 226)
1974 **Angus & Dundee** mouth of Craigmill Burn, Carnoustie, 8th September (T M Clegg) (*Scottish Birds* 8: 424)
1975 **Moray & Nairn** Culbin Bar, 12th June (R H Dennis, P Conder) (*Scottish Birds* 9: 197)
1981 **Northeast Scotland** Ythan Estuary, f, 10th to 14th May (K B Shepherd *et al*) (*Scottish Bird Report* 1981: 26)
1984 **Northeast Scotland** Rattray, 30th April (T W Marshall) (*Scottish Bird Report* 1984: 24)
1985 **Lothian** Aberlady Bay, m, 5th to 6th April (P R Gordon *et al*) (*Scottish Birds* 14: 103)
1985 **Fife** Eden Estuary, 22nd April (B A Combes) (*Scottish Birds* 14: 103)
1993 **Lothian** Tyninghame, m, 1st to 3rd May (M & Mrs B D Griffin, I J Andrews *et al*) (*Scottisn Bird Report* 1993: 24)
1994 **Highland** Brora, Sutherland, m, 27th May (F Western, A Vittery, A Mainwood) (*Scottish Bird Report* 1994: 27)
1998 **Lothian** Tyninghame, m, 25th April (M Griffin *et al*) (*Scottish Bird Report* 1998: 43)
1999 **Lothian** Musselburgh, f, 3rd May (D Allan *et al*) (*Scottish Bird Report* 1999: 50)

Kentish Plover, Lothian 2002 *Harry Scott*

Greater Sand Plover, N E Scotland 1991
Sam Alexander

Greater Sand Plover
Charadrius leschenaultii (4, 13)

1979 **Orkney** Sandside Bay, Deerness, 9th to 16th June (M Andrews, S W Holmes, D Lea *et al*) (*British Birds* 74: 467)

1982 **Lothian** Aberlady Bay, 24th June (A Brown, P R Gordon *et al*) (*British Birds* 76: 492; *Scottish Birds* 14: 457; *Lothian Bird Report* 1982: 63-64)

1991 **Northeast Scotland** Don Estuary, adult or first summer, 18th to 19th August (D J Bain, K D Shaw, G Smith *et al*) (*British Birds* 85: 525)

1999 **Lothian** Tyninghame, m, 6th to 7th June (M Griffin, C Scott *et al*) (*British Birds* 93: 529; *Birding World* 12: 236-237; *Lothian Bird Report* 1999: 125-126; *Birding Scotland* 2: 135-137)

Caspian Plover
Charadrius asiaticus (2, 5)

1988 **Lothian** Aberlady, adult, 12th to 13th July (J Busby, P R Gordon, B D & M Griffin *et al*) (*British Birds* 82: 522; *Lothian Bird Report* 1988: 87-88)

1996 **Shetland** Skelberry, f, 3rd to 4th June (H R Harrop, M Heubeck, I S Robertson *et al*) (*British Birds* 90: 469; *Shetland Bird Report* 1996: 82-83; *Birding World* 9: 219-220)

Pacific Golden Plover
Pluvialis fulva (13, 48)

1976 **Lothian** Aberlady Bay, adult, 10th to 16th July (D J Bates *et al*) (*British Birds* 71: 499)

1977 **Lothian** Aberlady Bay, adult, 9th July (A Brown, G L Sandeman, W Thom) (*British Birds* 71: 499)

1988 **Shetland** Uyeasound, Unst, adult, 5th to 13th November (P M & Mrs J A Ellis *et al*) (*British Birds* 82: 522)

1991 **Orkney** North Ronaldsay, adult, 14th July to 9th August (P J Donnelly, M Gray, E R Meek *et al*) (*British Birds* 85: 525)

1992 **Fair Isle** adult, 2nd to 3rd July (N J Riddiford, Dr R Riddington *et al*) (*British Birds* 86: 477)

1992 **Orkney** North Ronaldsay, adult, 1st to 3rd August (P J Donnelly, D Jackson, K A Wilson *et al*) (*British Birds* 86: 477)

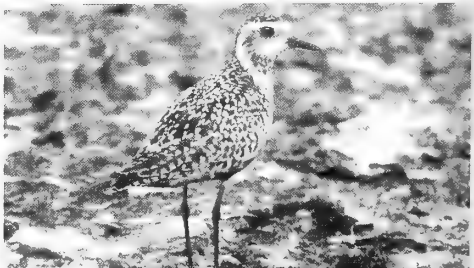
1995 **Orkney** North Ronaldsay, adult, 16th to 21st September (P J Donnelly *et al*) (*British Birds* 89: 498)

1996 **Orkney** Stronsay, juvenile to first winter, 5th to 10th October (J F Holloway *et al*) (*British Birds* 90: 470)

1998 **Shetland** Fetlar, adult, 10th July (J & T G Davies) (*British Birds* 92: 572; *Shetland Bird Report* 1998: 91)

2000 **Outer Hebrides** Peninerine, South Uist, adult, 31st July (D B Jackson, B Rabbits, A Stevenson *et al*) (*British Birds* 95: 492)

2000 **Fair Isle** juvenile, 2nd to 12th October, possibly since 28th September (A J Bull, D N Shaw *et al*) (*British Birds* 94: 469)



Pacific Golden Plover, Outer Hebrides 2000
Digger Jackson

2000 Argyll Vaul, Tiree, adult, 12th October (A J Leitch) (*British Birds* 94: 469)

2001 Outer Hebrides North Boisdale, South Uist, adult, 14th October to 4th November (W A K Neill, B Rabbits, A Stevenson *et al*) (*British Birds* 95: 492)

[1887 Orkney]

Sociable Lapwing
Vanellus gregaria (3, 41)

1926 Orkney North Ronaldsay, first winter f, shot, 3rd November (*Scottish Naturalist* 1927: 127)

1949 Orkney Isbister, Rendall, early December (*Scottish Birds* 5: 468)

1969 Orkney Carrick, Eday, for about a week around 15th January (J S Byres) (*British Birds* 63: 275; *Scottish Birds* 5: 467)

Great Knot
Calidris tenuirostris (1, 2)

1989 Shetland Scatness and Pool of Virkie, adult, 15th September (P M Ellis, P V Harvey *et al*) (*British Birds* 84: 469, 85: 426-429)

Semipalmated Sandpiper
Calidris pusilla (18*, 68)

1992 Fair Isle 13th to 15th May (P V Harvey, S C Votier *et al*) (*British Birds* 86: 478; *Scottish Birds* 16: 277-279)

1993 Orkney Stronsay, 7th to 8th June (J F Holloway, M & Mrs L Johnson, Miss J Maples) (*British Birds* 87: 525; *Scottish Birds* 17: 173)

1996 Shetland Pool of Virkie and Scatness, juvenile, 11th to 22nd September (A Brown, H R Harrop, A McCall *et al*) (*British Birds* 90: 471; *Shetland Bird Report* 1996: 83)

1997 Orkney Deerness, adult, 25th July (K E Hague) (*British Birds* 91: 473)

1999 Outer Hebrides Loch Paible, North Uist, juvenile, 4th September (B Rabbitts) (*British Birds* 93: 530-531)

1999 Argyll Gott Bay, Tiree, juvenile, 6th, 9th to 10th September (A J Leitch, M Williamson); adult, 9th to 10th September (A J Leitch) (*British Birds* 93: 530-531)

1999 Argyll Loch Gruinart, Islay, juvenile, 9th to 11th September; adult, 10th September (Dr T ap Rheinallt, A J Whitehouse *et al*) (*British Birds* 93: 530-531)

1999 Outer Hebrides Balgarva area, South Uist, 2 adults, 10th to 11th September; third adult, 11th September; juvenile, 10th to 23rd September; second juvenile, 11th to 12th, 19th September (B Rabbitts, A Stevenson *et al*) (*British Birds* 93: 530-531)

1999 Dumfries & Galloway Port Logan, juvenile, 18th to 23rd September (B Orr *et al*) (*British Birds* 94: 470)

1999 Outer Hebrides Loch Paible, North Uist, juvenile, 19th September (the late A D Barter, J K Higginson, S Turner); second juvenile, 21st September (the late A D Barter, B Rabbitts *et al*) (*British Birds* 93: 530-531)

2001 Shetland Uyeasound, Unst, adult, 16th June (S C Votier) (*British Birds* 95: 492)

Western Sandpiper, Lothian 1997
Gary Bellingham

Western Sandpiper
Calidris mauri (4, 7)

1956 Fair Isle trapped, 27th May to 3rd June (*British Birds* 56: 55 58)

1988 Shetland Pool of Virkie, juvenile, 25th September (P M Ellis, J D Okill, G W Petrie *et al*) (*British Birds* 83: 461; *Birding Scotland* 1: 130-136)

1997 Lothian Musselburgh, first summer or adult, 9th to 25th August, probably since 25th July (I J Andrews *et al*) (*British Birds* 91: 474; *Birding World* 10: 302-304; *Lothian Bird Report* 1997: 103-106)

1998 Orkney Deerness, juvenile, 28th September to 3rd October (K E Hague *et al*) (*British Birds* 92: 572; *Birding Scotland* 2: 78)

Red-necked Stint
Calidris ruficollis (2, 6)

1994 Fair Isle juvenile, recently dead, 31st August (Dr R Riddington, J A Stout *et al*) (*British Birds* 88: 512; *Birding World* 7: 355-358), specimen at National Museums of Scotland (NMSZ 1994.127)

2000 Shetland Pool of Virkie, adult, 18th to 21st July (Dr R Riddington *et al*) (*British Birds* 94: 470; *Shetland Bird Report* 2000: 93; *Birding Scotland* 3: 160-161)

Least Sandpiper
Calidris minutilla (3, 29)

1955 Shetland Pool of Virkie, f, shot, 14th August (*Scottish Naturalist* 1957: 170), specimen at National Museums of Scotland (NMSZ 1956.8.2)

1965 Clyde Cadder, near Lenzie, Lanarkshire, 11th to 14th September (J M S Arnott, W M M Eddie, D J Norden) (*British Birds* 60: 354; *Scottish Birds* 4: 504-506)

Least Sandpiper, N E Scotland 1988 Andy Webb

1988 Northeast Scotland Cove, near Aberdeen, adult, 31st July to 4th August (J McKee, K D Shaw, J L Swallow *et al*) (*British Birds* 82: 523)

Sharp-tailed Sandpiper
Calidris acuminata (4, 23)

1956 Clyde Clyde Estuary, Hamilton, Lanarkshire, first winter, 13th to 21st October (*Scottish Birds* 1: 94-96)

1985 Lothian Aberlady Bay, adult, 17th August (G Anderson, I J Andrews, P R Gordon *et al*) (*British Birds* 79: 546; *Scottish Birds* 14: 124; *Lothian Bird Report* 1985: 110-111)

1993 Shetland Scatness, adult, 13th to 15th September (M Mellor *et al*) (*British Birds* 87: 527; *Shetland Bird Report* 1993: 117-118)

2000 Shetland Scatness and Pool of Virkie, adult, 27th August to 1st September (P V Harvey, Dr R Riddington *et al*) (*British Birds* 94: 471; *Shetland Bird Report* 2000: 93-94)

Stilt Sandpiper
Micropalama himantopus (2, 19)

1970 Highland Dornoch Point, Sutherland, 18th April (D Macdonald, Miss V M Thom) (*British Birds* 64: 350; *Scottish Birds* 6: 280)

1976 Shetland Loch of Gards, Scatness, 11th to 18th September (R A Butler, D Coutts, D R Waugh *et al*) (*British Birds* 70: 421)

Short-billed Dowitcher
Limnodromus griseus (1, 1)

1999 Northeast Scotland Rosehearty, Aberdeenshire, juvenile, 11th to 24th September (P S Crockett, I Gordon, D M Pullan, J Smith *et al*) (*British Birds* 94: 472; *Birding World* 12: 364-370; *Birding Scotland* 2: 157-161)

Hudsonian Godwit
Limosa haemastica (1, 2)

1988 Northeast Scotland Slains, Collieston, 26th September (Miss J Cooper, R Duncan) (*British Birds* 83: 463; *Birding Scotland* 2: 91-92)

Eskimo Curlew
Numenius borealis (3, 7)

1855 Northeast Scotland Cairn Monearn, near Stonehaven, Kincardineshire, shot, 6th September (*Naturalist* 1855: 265)

1878 Northeast Scotland Slains, Aberdeenshire, m, shot, 28th September (*Zoologist* 1879: 135)

1880 Northeast Scotland Forest of Birse, Kincardineshire, adult m, shot, 21st September (*Zoologist* 1880: 485, 515)

These 3 Scottish records (BOU 1971) are not reviewed here on the assumption that this work is being done by BOURC.

Short-billed Dowitcher, N E Scotland 1999
George Reszeter

Whimbrel
Numenius phaeopus

North American race *N p hudsonicus*, **Hudsonian Whimbrel** (2, 3)

1955 Fair Isle 27th to 31st May (*British Birds* 48: 379-381)

1974 Shetland Out Skerries, 24th July to 8th August (Dr B Marshall, I S Robertson, J H Simpson *et al*) (*British Birds* 68: 316)

Upland Sandpiper
Bartramia longicauda (6, 45)

1933 Dumfries & Galloway Ruthwell, Dumfriesshire, adult f, shot, 13th October (*British Birds* 27: 205-206), specimen at National Museums of Scotland (NMSZ 1976.68)

1970 Fair Isle 5th October (R H Dennis, Dr B Marshall, S Thomson *et al*) (*British Birds* 64: 350; *Scottish Birds* 6: 445)

1975 Fair Isle 25th September (R A Broad, G J Jobson, P J Roberts *et al*) (*British Birds* 69: 336)

1980 Outer Hebrides Hirta, St Kilda, 24th April (D J R Counsell, W Wright *et al*) (*British Birds* 75: 503)

1993 Shetland Foula, juvenile, 22nd September to 6th October, found dead 18th November (M J McKee, G W Petrie, Mrs F Ratter *et al*) (*British Birds* 87: 527; *Shetland Bird Report* 1993: 116-117)

1996 Shetland Foula, 2nd September (A R Mainwood); presumed same, 14th to 15th (M J McKee, A R Mainwood) (*British Birds* 90: 478)

Marsh Sandpiper
Tringa stagnatilis (8, 113)

1966 Caithness Dunnet Bay, 3rd to 5th September (K Goodchild, Dr P McMorran, D M Stark *et al*) (*British Birds* 60:318, *Scottish Birds* 4: 557)

1969 Shetland Strand Loch, Gott, 4th to 6th May (D Coutts, R Duthie) (*British Birds* 63: 277; *Scottish Birds* 6: 42, 201)

1979 Ayrshire Doonfoot, 29th July (I H Leach) (*British Birds* 73: 509)

1979 Orkney Bridesness Loch, North Ronaldsay, 23rd August (J W A Cutt) (*British Birds* 73: 509)

1984 Moray & Nairn Lossiemouth, Moray, 20th to 23rd April (R H Dennis, N Elkins, C Gervaise *et al*) (*British Birds* 78: 550)

1990 Northeast Scotland Cotehill Loch, 15th to 16th May (C Barton, A G Clarke *et al*) (*British Birds* 86: 481)

1994 Outer Hebrides Loch Sandaray, North Uist, adult, 8th to 9th October (J & P R Boyer, T J Dix) (*British Birds* 90: 479)

1997 Lothian Musselburgh, adult, 18th to 19th May (B Robertson, G Thompson *et al*) (*British Birds* 91: 476; *Lothian Bird Report* 1997: 100-101)

Greater Yellowlegs
Tringa melanoleuca (6, 28)

1953 Shetland Boddam, Dunrossness, 26th to 27th May (Venables & Venables 1955)

1957 Northeast Scotland Ythan Estuary, immature male moulting into winter plumage, 25th October, found dead later same day (*Scottish Birds* 1: 94)

1978 Outer Hebrides Peninerine, South Uist, 14th August (Dr C J Spray, D Walker) (*British Birds* 72: 524)

1985 Highland Loch Sligachan, Skye, 19th May (W T Appleyard) (*British Birds* 79: 550)

1985 Argyll Glenegedale, Islay, 25th October (Dr A A & I Clark) (*British Birds* 81: 559)

1999 Outer Hebrides Loch Mór, Benbecula, 2nd November to at least 9th March 2000 (S Murray, B Rabbitts *et al*) (*British Birds* 93: 534; *Birding Scotland* 3: 35), last noted Loch Bail'Fhionnlaidh, 7th May

Solitary Sandpiper
Tringa solitaria (3, 26)

Pre 1869 Clyde Banks of Clyde, Lanarkshire, shot, some years previous to 1869 (*Ibis* 1870: 291-292)

1990 Outer Hebrides Malaclete, North Uist, juvenile, 20th October (T J Dix, W D Oldham) (*British Birds* 84: 472)

1992 Fair Isle juvenile, 13th to 15th September (P V Harvey, Dr R Riddington *et al*) (*British Birds* 86: 484; *Scottish Birds* 17: 62)

Greater Yellowlegs, Outer Hebrides 1999 *Adrian Webb*

Terek Sandpiper
Xenus cinereus (9, 59)

1975 **Shetland** Whalsay, 20th to 21st June (W Arthur, Dr B Marshall, J H Simpson *et al*) (*British Birds* 69: 337; *Scottish Birds* 10: 53-55)

1977 **Caithness** Sandside Bay, Reay, 5th to 12th June (Mrs P M Collett, S Edwards, J M Gunn *et al*) (*British Birds* 71: 504)

1987 **Orkney** Loch of Tankerness, 5th to 8th June (M Gray, E R Meek *et al*) (*British Birds* 81: 560)

1991 **Shetland** Mid Yell Voe, Yell, m, song heard, 25th May (G W Allison *et al*) (*British Birds* 85: 527)

1995 **Shetland** Boddam, 11th to 13th June (I S Robertson *et al*) (*British Birds* 89: 503)

1996 **Clyde** Clyde Estuary, Dumbarton, 22nd to 30th September (I P Gibson *et al*) (*British Birds* 90: 479)

1997 **Northeast Scotland** Loch of Strathbeg, 9th May (S Bowie, A Burnett, C Shaw) (*British Birds* 91: 477)

1998 **Clyde** Ardmore Point, at least 31st October (J Bell, J Duncan) (*British Birds* 92: 578)

1998 **Moray & Nairn** Findhorn Bay, 29th to 31st October (D M Pullan *et al*) (*British Birds* 92: 578)

Spotted Sandpiper
Actitis macularia (16*, 122)

1971 **Lothian** Tyninghame, 30th October (L L J Vick) (*British Birds* 65: 332; *Scottish Birds* 7: 204-205)

1975 **Highland** Skye, pair with nest and 4 eggs, unsuccessful, 15th June to 3rd July (G E Wilson *et al*) (*British Birds* 69: 288-292; *Birding Scotland* 2: 10-12)

1976 **Lothian** North Berwick, 30th May (J Fenton) (*British Birds* 70: 421)

1982 **Outer Hebrides** Hirta, St Kilda, 22nd to 23rd May (A Bennett, J J Gordon) (*British Birds* 76: 498)

1983 **Orkney** Sule Skerry, adult, 30th July to 4th August (T Bagworth, G Barker, A Lowe) (*British Birds* 79: 550)

1983 **Outer Hebrides** Peninerine, South Uist, 31st July to 1st August (Miss S Alliez, M J Crosby) (*British Birds* 77: 527)

1984 **Argyll** Loch Indaal, Islay, 5th June (A McNeil) (*British Birds* 78: 551)

1986 **Fair Isle** 20th May (R G Adam, N J Riddiford, A Whittaker *et al*) (*British Birds* 80: 540)

1991 **Clyde** Balgray Reservoir, Barrhead, 27th September to 1st October (J Coyle, J McOwat, J & Mrs V Wilson *et al*) (*British Birds* 85: 528)

1991 **Shetland** Twageos, Lerwick, adult, 22nd to 26th September (D Coutts, D Suddaby *et al*) (*British Birds* 85: 528)

1992 **Perth & Kinross** Annat, Loch Rannoch, 30th April to 26th May (A A Murray, W Thompson, T Vorsterman *et al*) (*British Birds* 86: 484)

1996 **Shetland** Fetlar, 17th to 18th May (J & T G Davies *et al*) (*British Birds* 90: 481)

1998 **Shetland** Wester Water, Mainland, 30th June (M Mellor); same, Punds Water, 5th July (Dr R Riddington) (*British Birds* 92: 578, 93: 535; *Shetland Bird Report* 1998: 91-92)

1999 **Moray & Nairn** Loch Spynie, adult, 25th May (D M Pullan *et al*) (*British Birds* 93: 535)

[Early 1800s Angus & Dundee, Pre 1840 Caithness, Pre 1844 Shetland, 1867 Northeast Scotland]

Grey-tailed Tattler
Heteroscelus brevipes (1, 2)

1994 **Moray & Nairn** Burghead, Moray, juvenile, 27th November to 27th December (P T Hirst, J M Stenning *et al*) (*British Birds* 88: 517; *Birding World* 7: 469- 472)

Franklin's Gull
Larus pipixcan (8, 40)

1980 **Ayrshire** Bogside, Irvine, probably first summer, 2nd to 6th July (R G Cadlow, D L Clugston *et al*) (*British Birds* 74: 474; *Scottish Birds* 12: 258-259)

1981 **Highland** Isle of Canna, Inner Hebrides, second summer, 5th to 10th July, found moribund 11th (R L Swann *et al*) (*British Birds* 75: 506), specimen at National Museums of Scotland (NMSZ 1981.143)

1985 **Outer Hebrides** North Boisdale, South Uist, adult, 6th to 14th August (T J Stowe, M Tonkin *et al*) (*British Birds* 79: 552)

1990 **Shetland** Loch of Spiggie and Loch of Hillwell, second winter/second summer, 10th to 11th May (P M Ellis, Dr C F Mackenzie *et al*) (*British Birds* 84: 474)

1991 **Shetland** Skellister, South Nesting, adult, 27th May (N & Mrs E K McMahon) (*British Birds* 85: 529)

1992 **Lothian** Musselburgh, first summer, 3rd to 4th June (T Gillies, K Gillon, Dr L L J Vick *et al*) (*British Birds* 86: 485; *Lothian Bird Report* 1992: 113-114)

1996 **Shetland** Foula, first summer, 6th to 7th July (R W Furness, A R Mainwood *et al*) (*British Birds* 90: 484)

1998 **Shetland** Hillwell, first summer, 15th May (M Mellor *et al*) (*British Birds* 92: 579)

Bonaparte's Gull
Larus philadelphia (16, 113)

1850 **Clyde** Loch Lomond, Dumbartonshire, adult, shot, end of April (*Zoologist* 1851: 3117-3118)

1967 **Highland** Oldshoremore, near Kinlochbervie, Sutherland, 17th August (D T & Mrs P Parkin) (*British Birds* 61: 344; *Scottish Birds* 5: 175)

1972 **Fife** Luthrie, Cupar, immature, 26th to 27th February (P N J Clark, A Grieve, D W Oliver) (*British Birds* 66: 343; *Scottish Birds* 7: 258)

1973 **Highland** Scourie, Sutherland, first summer, 7th June (R W Byrne, C J Mackenzie-Grieve) (*British Birds* 67: 326; *Scottish Birds* 8: 76)

1975 **Argyll** Loch Indaal, Islay, adult, 26th to 27th June (K & Mrs A Verrall) (*British Birds* 69: 340)

1975 **Argyll** Claggain Bay, Islay, adult, 12th September (possibly same as above) (L Catlin, K Verall) (*British Birds* 69: 340)

1982 **Shetland** Fetlar, adult, 25th June to 11th July (J N Dymond, M J Ware *et al*) (*British Birds* 76: 499)

1986 **Highland** Fort William, first summer, 30th May (A J L Smith *et al*) (*British Birds* 80: 541)

1987 **Shetland** Loch of Spiggie, first summer, 23rd May (J N Dymond) (*British Birds* 81: 562)

1989 **Outer Hebrides** Ardivachar, South Uist, first summer, 27th August (T J Dix) (*British Birds* 83: 466)

1990 **Highland** Strath Bay, Gairloch, adult, 31st July to 1st August (D M Pullan, I T Rowlands *et al*) (*British Birds* 86: 489)

1997 **Fife** Kingsbarns Beach and Cambo Sands area, adult, 18th August to 12th September (R A Lambert, Dr J Wilson *et al*) (*British Birds* 91: 479)

1998 **Lothian** Musselburgh, first summer, 17th August (B A Hickman) and 9th September (A Brown) (*British Birds* 92: 580; *Lothian Bird Report* 1998: 124)

1998 **Angus & Dundee** Broughty Ferry, first-winter, 26th to at least 30th December (S R Green) (*British Birds* 92: 580)

2000 **Angus & Dundee** Lunan Bay, adult, 2nd October (S R Green, R McCurley *et al*) (*British Birds* 94: 477)

2001 **Outer Hebrides** Ardivachar Point, South Uist, adult, 7th to 9th May (B Rabbits, A Stevenson *et al*) (*British Birds* 95: 497)

[1934 & 1937 Shetland]

Herring Gull
Larus argentatus

Mediterranean race *L a michahellis*, '**Western Yellow-legged Gull**' (17*, -)

1989 **Orkney** Kirkwall, adult, 20th April (M Gray, E Meek, N Odin)

1991 **Ayrshire** Newton shore, adult, 6th January to 12th July; same 3rd April to 14th May 1994 (and apparently also 1992 and 1993); same, Doonfoot 2nd February 1995 and intermittently Newton shore to 6th May (R H Hogg *et al*)

1997 **Ayrshire** Doonfoot, adult, 16th April (A A Murray)

1997 **Ayrshire** Doonfoot, 2 adults, 28th July (A Stevenson)

1998 **Argyll** Soa Point, Tiree, adult, 23rd February (A Hachenberg, A J Leitch)

1998 **Ayrshire** Blairbowie, adult, 20th April; possibly same, Martnaham Loch 8th May (R H Hogg, D Given)

1998 **Northeast Scotland** Ugie estuary, adult, 15th August (P A A Baxter)

1999 **Northeast Scotland** Ythan estuary, adult, 28th June (C Gibbins)

1999 **Ayrshire** Barassie, adult, 17th August (R H Hogg)

1999 **Orkney** North Ronaldsay, adult, 2nd September (P Brown, R M Brown, R McGregor)

2000 **Northeast Scotland** River Ugie, adult, 9th to 10th July (J J Sweeney, C Gibbins *et al*)

2000 **Fife** Tayport, 3rd summer/4th winter, 11th August (A W Lauder, K D Shaw)

2000 **Clyde** Strathclyde Country Park, adult, 9th to 13th December (S C Votier, C McInerny *et al*); another, adult, 6th January 2001; both 7th January to 4th February 2001 and probably same 2, 9th November 2001 to 6th January 2002

2001 **Fife** Tayport, 4th year, 24th May (K D Shaw, J Sykes)

2001 **Fife** Tayport, 3rd summer, 22nd July (K D Shaw)

All records are considered to belong to the race *michahellis*, with the proviso that *atlantis* has not been fully ruled out. Three records of claimed 'Caspian Gull' *L a cachinnans* are currently being assessed by BBRC.

North American race *L a smithsonianus*, '**American Herring Gull**' (1, 6)

1997 **Sea area Rockall** c185 km off St Kilda, 57° 43′ N 12° 24′ W, juvenile/first winter, 11th September (R W White) (*British Birds* 91: 479; *Birding Scotland* 1: 42-44)

Gull-billed Tern
Sterna nilotica (8, 267)

1913 **Orkney** Pentland Skerries, m, exhausted, 7th May (*Scottish Naturalist* 1913: 154), specimen at National Museums of Scotland (NMSZ 1913.14)

1971 **Fair Isle** 24th to 29th May (R A Broad, Miss S Girling, I S Robertson *et al*) (*British Birds* 65: 337)

1977 **Upper Forth** Bo'ness, (then) West Lothian, 21st May (R Bernard) (*British Birds* 71: 508)

1987 **Outer Hebrides** Drimsdale, South Uist, 3rd to 6th May (T J Dix, Dr A Hudson, D B Jackson *et al*) (*British Birds* 81: 566)

1990 **Dumfries & Galloway** Loch Ryan, first winter, 12th October (B W Litherland) (*British Birds* 86: 490)

Gull-billed Tern, Outer Hebrides 2000 Ken Shaw

1992 Orkney North Ronaldsay, 27th May (M Gray) (*British Birds* 86: 490)

1995 Shetland Pool of Virkie, 25th June (A D & J Clifton, G Robertson) (*British Birds* 89: 506; *Shetland Bird Report* 1995: 93)

2000 Outer Hebrides Loch Bee, South Uist, 14th to 16th July (J K, K A & K D Shaw *et al*) (*British Birds* 94: 478; *Birding Scotland* 3: 156-157)

[1938 Shetland]

Caspian Tern

Sterna caspia (20*, 265)

1968 Clyde Endrick Mouth, Loch Lomond, Dumbartonshire, 7th August (M Forrester) (*British Birds* 62: 473, *Scottish Birds* 5: 390)

1971 Lothian Aberlady Bay, 20th June (D G Andrew, A D K Ramsay) (*British Birds* 65: 337; *Scottish Birds* 7: 54)

1971 Lothian Aberlady Bay, 2, 1st July (A D K Ramsay) (*British Birds* 65: 337; *Scottish Birds* 7: 54)

1974 Northeast Scotland Loch of Strathbeg, Aberdeenshire, 13th August (J Dunbar) (*British Birds* 68: 321)

1975 Northeast Scotland Ythan Estuary, Aberdeenshire, 25th June (A H Cuthbert) (*British Birds* 69: 342)

1976 Northeast Scotland Ythan Estuary, Aberdeenshire, 25th July (P M Ellis, C J Spray, L Steele) (*British Birds* 71: 508)

1976 Clyde Endrick Mouth, Dumbartonshire, 4th July (K Francis) (*British Birds* 71:508)

1976 Shetland Yell, found long dead on shoreline, early August, ringed as nestling near Stockholm, Sweden, 18th June 1975 (per BTO Ringing Office and J Ohlsson) (*British Birds* 71: 508)

1978 Fair Isle 29th May (P J Ewins) (*British Birds* 72: 527)

1979 Shetland West Voe, Sumburgh, 8th October (I G & Mrs C D Davidson) (*British Birds* 73: 513)

1981 Argyll Off Ardpatrick Point, Sound of Gigha, 6th June (D L & Mrs R Z Clugston) (*British Birds* 75: 510)

1981 Lothian Hound Point, Edinburgh, 3rd July (A Stewart) (*British Birds* 75: 510)

1982 Dumfries & Galloway Broom Point, Loch Ken, Kirkcudbrightshire[1], 8th to 10th July (R G Hawley, Miss J Howie) (*British Birds* 76: 501) [[1] location as given in *Scottish Bird Report* 1982: 30]

1982 Outer Hebrides Sound of Barra, 9th June (A Strand) (*British Birds* 76: 501)

1985 Fife Anstruther, 8th September (C & Mrs A-M Smout) (*British Birds* 79: 556)

1987 Fair Isle 29th May (S J Aspinall) (*British Birds* 81: 566)

1990 Ayrshire Martnaham Loch, Kerse Loch and Doonfoot, 4th to 6th August (D Given, B Orr, J & J Woods *et al*) (*British Birds* 84: 476; *Ayrshire Bird Report* 1990: 52)

1998 Orkney Papa Westray, 16th April (S D Wellock) (*British Birds* 92: 583)

1999 Caithness Brough, 1st June (J Smith *et al*) (*British Birds* 93: 538)

Royal Tern

Sterna maxima (1, 6)

1999 Lothian Thorntonloch, 9th August (I J Andrews); same Musselburgh, 9th (D Allan *et al*) (*British Birds* 93: 538; *Birding Scotland* 2: 165-167; *Lothian Bird Report* 1999: 127-129)

Lesser Crested Tern

Sterna bengalensis (2, 8)

1987 Lothian Musselburgh, adult, 21st to 22nd August (I J Andrews, M R Leven *et al*) (*British Birds* 81: 567; *Lothian Bird Report* 1987: 79); presumed same, Musselburgh, 7th to 16th August 1989 (Dr S R D & Mrs E S da Prato) (*British Birds* 83: 468); presumed same, **Borders** St Abbs Head, 16th May 1993 (M Collinson, J F McConnell, R D Murray) (*British Birds* 87: 533)

1989 Lothian Musselburgh, juvenile hybrid x Sandwich Tern *S. sandvicensis*, 8th to 12th, 25th August (C C McGuigan, J G Steele *et al*); same, Aberlady Bay, 2nd September (P R Gordon) (*British Birds* 83: 468; *Lothian Bird Report* 1989: 95-96)

Forster's Tern
Sterna forsteri (2, 15)

1985 Lothian Musselburgh and Granton Harbour, Edinburgh, 6th October to 9th November (I J Andrews, P R Gordon, Dr L L J Vick *et al*) (*British Birds* 79: 557; *Scottish Birds* 14: 126; *Lothian Bird Report* 1985: 111-113)

1994 Lothian Musselburgh area (on coast from Portobello, Edinburgh to Aberlady Bay, but mainly Musselburgh), first winter, 16th December to 10th April 1995 (C N Davison, K Gillon *et al*) (*British Birds* 88: 522); presumed same, **Northeast Scotland**, Ythan Estuary, first summer, 3rd May to 1st August 1995 (P Doyle, R McGregor *et al*) (*British Birds* 89: 507)

Forster's Tern, N E Scotland 1995 Mark Sullivan

Bridled Tern
Sterna anaethetus (4, 21)

1979 Orkney Stromness, first summer, 6th to 7th August (J Hamilton) (*British Birds* 73: 513)

1988 Northeast Scotland Sands of Forvie, 2nd August (A J M Smith) (*British Birds* 83: 468)

1993 Highland The Perches, Eigg, 21st July (J Chester) (*British Birds* 87: 533)

1994 Argyll Tiree, 30th June to 9th July (G Evans *et al*) (*British Birds* 89: 507)

Sooty Tern
Sterna fuscata (3, 26)

1939 Upper Forth Myatt Hill, near Denny, Stirlingshire, moulting into second winter, found dead, end of May (*British Birds* 33: 197-198), specimen at National Museums of Scotland (NMSZ 1939.45)

1954 Orkney Hill of Isbister, Rendall, 22nd April (*Scottish Naturalist* 1954: 190-191)

1989 Fife Isle of May, 14th July (Dr M P Harris, S J Holloway, R Proctor) (*British Birds* 91: 495; *Birding Scotland* 2: 126-128)

Whiskered Tern, N E Scotland 2001 Paul Baxter

Whiskered Tern
Chlidonias hybrida (2, 119)

1894 Dumfries & Galloway Carse Loch of Friars' Carse, Nithsdale, Dumfriesshire, adult male, shot, 29th May (*Annals of Scottish Natural History* 1894: 179-181), specimen at National Museums of Scotland (NMSZ 1895.148)

2001 Northeast Scotland Meikle Loch, adult, 27th to 29th June and 1st to 3rd July (P S Crockett, K Gillon *et al*); same, Loch of Strathbeg, 30th June (M B Cowie, I J Kelman *et al*) (*British Birds* 95: 499; *Birding Scotland* 4: 102)

Little Auk
Alle alle

Franz Josef Land race, *A a polaris* (5+, -)
The following specimens are attributed to *polaris* on the basis of wing lengths:

1954 **Shetland** Lerwick, f, 5th January, now at Bolton Museum (*Bulletin of the British Ornithogists' Club* 76: 107; *Ibis* 133: 439)

1956 **Shetland** Lerwick, f, 19th January, now at Bolton Museum (*Bulletin of the British Ornithogists' Club* 76: 107; *Ibis* 133: 439)

1990 **Northeast Scotland** Between Blackwater and Rattray Head, 29th April (*Scottish Birds* 5: 105; *Ibis* 133: 439)

1991 **Orkney** several birds found dead, January (*Scottish Bird Report* 1991: 46)

1997 **Orkney** Orphir, found dead, December (*Scottish Bird Report* 1997: 48)

[1912 Lothian/Fife, 1990 Shetland]

Oriental Turtle Dove
Streptopelia orientalis (1, 5)

1974 **Fair Isle** first year, 31st October to 1st November (G J Barnes, R A Broad) (*British Birds* 68: 322; *Scottish Birds* 10: 55-56)

Mourning Dove
Zenaida macroura (1, 2)

1999 **Outer Hebrides** Carinish, North Uist, first winter, 13th to 15th November (B J Hill, M McPhail, B Rabbitts *et al*) (*British Birds* 93: 539; *Birding World* 12: 453; *Birding Scotland* 3: 40-41)

Great Spotted Cuckoo
Clamator glandarius (1, 42)

1959 **Orkney** Rendall, immature, 14th to 30th August (E Balfour) (*British Birds* 53: 421; *Scottish Birds* 1: 152)

Black-billed Cuckoo
Coccyzus erythrophthalmus (3, 14)

1950 **Argyll** Near Southend, Kintyre, first winter, 6th November, found dead 8th (*Scottish Naturalist* 1951: 131)

1953 **Shetland** Foula, picked up exhausted, 11th October, died 12th, specimen at British Museum (Natural History) (*Scottish Naturalist* 65: 196)

1989 **Sea area Forties** '*Maureen*' oil platform, 58°08'N 01°42'E, found exhausted 30th September, taken into care, released 1st October (E Cox, B StJ Richards, M Wildon *et al*) (*British Birds* 83: 470)

Yellow-billed Cuckoo
Coccyzus americanus (10, 57)

1904 **Argyll** Colonsay, picked up dead, 6th November (*Annals of Scottish Natural History* 1910: 184)

1936 **Orkney** Doverhouse, Birsay, Mainland, obtained, 22nd October, specimen at Stromness Museum (*Scottish Naturalist* 1937: 46)

1952 **Shetland** Exnaboe, Mainland, immature f, picked up dying, 1st November (*Scottish Naturalist* 1955: 102), specimen at National Museums of Scotland (NMSZ 1953.1.8)

Mourning Dove, Outer Hebrides 1999
Brian Hill

1953 Angus & Dundee Near Old Montrose, Angus, 11th October (*British Birds* 47: 172-173)

1953 Highland Isle of Muck, Inverness shire, immature m, found dead, 3rd October (*British Birds* 47: 172), specimen at National Museums of Scotland (NMSZ 1953.41)

1953 Moray & Nairn Caskieben, Nairn, immature f, picked up alive, died later, 5th October (*British Birds* 47: 172), specimen at National Museums of Scotland (NMSZ 1953.42)

1956 Orkney Bryameadow Farm, Sandwick, Mainland, m, found exhausted, 12th October (*Scottish Birds* 6: 336), specimen at National Museums of Scotland (NMSZ 1956.68) † (per National Museums of Scotland)

1969 Argyll Barcaldine, Connel, found dying, last week of September (H Insley, D McDonald) (*British Birds* 65: 349)

1970 Caithness Thurso, f, picked up dying, 9th November (Dr P McMorran, per I H J Lyster) (*British Birds* 64: 356; *Scottish Birds* 6: 335), specimen at National Museums of Scotland (NMSZ 1983.40)

1991 Orkney North Ronaldsay, freshly dead, 25th September (A E Duncan, C Hill, L A Lamont *et al*) (*British Birds* 85: 532)

Barn Owl

Tyto alba

Continental European race *T a guttata*, '**Dark-breasted Barn Owl**' (23*, -)

The following is a list of records compiled from the published literature. It may be that some are open to question, and reassessment.

1915 Shetland Baltasound, Unst, m, caught, 5th November (*Scottish Naturalist* 1916: 76-77), specimen at National Museums of Scotland (NMSZ 1915.145)

1925 Orkney Near Langskaill, Stromness, February

Dark-breasted Barn Owl, Shetland 1999
Bill Jackson

1928 Orkney Near Kirkwall, no date

1934 Fife Isle of May, adult f, caught, 19th December, died a few days later, specimen at National Museums of Scotland (NMSZ 1935.2)

1943 Fair Isle October to November (*British Birds* 38: 230)

1944 Orkney North Ronaldsay, dead, 2nd November

1945 Shetland Kergord, up to 4 (plus 1 *T a alba*), 1st to 15th December

1945/46 Shetland Scousburgh, killed by cat, winter

1951 Shetland Sumburgh, shot, 16th October, after being present for '2 to 3 weeks'

1958 Shetland Halligarth, Baltasound, Unst, 13th May

1979 Orkney Sanday, 22nd May

1982 Shetland Sandwick, 10th November, died 11th (*Scottish Bird Report* 1982: 32)

1989 Sea area Forties *Buchan A platform*, 57° 54' N 0° 02' E, 17th November, presumed same, caught, 19th, had been ringed southern Germany in June 1988

1990 Orkney Ness, Burray, 23rd to at least 25th October (*Scottish Bird Report* 1990: 42)

1991 Sea area Forties *Forties field*, 57° 43' N 0° 54' E, late February, taken into care 1st March and released at Kintore (Northeast Scotland) on 6th March (per A Thorpe)

1997 Orkney Eday, found dead, November, had been ringed Heligoland (Germany) (*Scottish Bird Report* 1997: 50)

1997 Orkney Stronsay, 23rd November (*Scottish Bird Report* 1997: 50)

1998 Fife Isle of May, 22nd April and 2-3 dates thereafter, before being found recently dead on 14th June (*Scottish Bird Report* 1998: 70; *Isle of May Bird Report* 1998), now at National Museums of Scotland (NMSZ 2000.125)

1998 Northeast Scotland Barthol Chapel, near Oldmeldrum, adult, found exhausted, 22nd September, released where found after 10 days (per A Thorpe)

1999 Shetland Cunningsburgh, 24th September; presumed same, Sumburgh Airport, 29th to 30th October, trapped 30th (*Birding World* 12: 454-457)

[1886 Northeast Scotland, 1897 Northeast Scotland, 1896 Lothian, 1903 Dumfries & Galloway, 1916 Dumfries & Galloway, 1937 Clyde]

Northern Hawk Owl
Surnia ulula (5, 10)

1860 Shetland Skaw, Unst, shot, December (Saxby 1874, pp. 54-55)

1863 Clyde Near Maryhill, Lanarkshire, shot, some time before 29th December, *S u caparoch* (*Proc. Nat. Hist. Soc. Glasgow* 1: 81)

1868 Clyde Near Greenock, Renfrewshire, shot, some time before 20th November (*Proc Nat Hist Soc Glasgow* 1: 235-236)

1898 Northeast Scotland Gight, Aberdeenshire, adult f, shot, 21st November, *S. u. ulula* (*Annals of Scottish Natural History* 1899: 49)

1983 Shetland Near Lerwick, 12th to 13th September; same, Bressay, 20th to 21st September (D Coutts, A Nicol, J D & G Okill *et al*) (*British Birds* 77: 538)

[1871 Clyde]

Tengmalm's Owl
Aegolius funereus (12, 56)

1860 Lothian Cramond Island, caught, December (*Proceedings of the Royal Physical Society* 2: 244-245)

1886 Northeast Scotland Near Peterhead, Aberdeenshire, f, killed, 3rd February (*Scottish Naturalist* 1886: 308)

1897 Shetland Scalloway, f, found dead, 14th March (*Scottish Naturalist* 1915: 143), specimen at Lerwick Museum.

1901 Shetland Sandsting, Mainland, f, shot, 5th November (*Annals of Scottish Natural History* 1902: 119)

1908 Shetland Unst, adult f, caught, 8th January (*Annals of Scottish Natural History* 1910: 54)

1912 Shetland Unst, caught, 23rd January (*Scottish Naturalist* 1912: 116)

1915 Perth & Kinross Craighall, Blairgowrie, Perthshire, adult m, February, now at Perth Museum (*Scottish Naturalist* 1915: 151)

1959 Orkney Cruan, Firth, 26th and 27th December and 1st January 1960 (E Balfour, J Wood) (*British Birds* 55: 565; *Scottish Birds* 1: 453)

1961 Orkney Stromness, 1st May (E Balfour) (*British Birds* 55: 576)

1980 Orkney Finstown, adult, 13th to 20th October, trapped 14th (D Manson, E J & S J Williams) (*British Birds* 74: 479)

1980 Orkney Finstown, adult, trapped, 18th November, later found dead (C Corse, P Reynolds, E J Williams *et al*) (*British Birds* 74: 479; Booth *et al* 1984)

1986 Orkney Egilsay, 31st May to 1st June (R Gallernault, Mrs E Hibbert *et al*); presumed same, Glims Holm, dead about 3 to 4 weeks, 25th June (R F Adam per E Meek) (*British Birds* 80: 547)

[1847 Highland, 1851 Orkney, Pre 1874 Shetland, 1873 Northumberland, 1897 Shetland, 1917/18 Shetland]

Common Nighthawk
Chordeiles minor (1, 18)

1978 Orkney Kirkwall Airport, trapped, 12th September (J R L Hogarth, A D K Ramsay, E J Williams) (*British Birds* 72: 529; *Scottish Birds* 11: 85)

Chimney Swift
Chaetura pelagica (2, 13)

1983 Borders Coldingham, 5th November (Mrs F Evans) (*British Birds* 93: 541)

1991 Fife St Andrews, 8th to 10th November (Dr R W Byrne, D E Dickson, Dr J Graves *et al*) (*British Birds* 86: 497; *Scottish Birds* 16: 216-218)

White-throated Needletail
Hirundapus caudacutus (4, 7)

1983 Orkney South Ronaldsay, 11th to 12th June (J & Mrs R McCutcheon, E R Meek, Dr J Muir) (*British Birds* 77: 539; *Scottish Bird Report* 1984: 50)

1984 Shetland Quendale, 25th May to 6th June (D Coutts *et al*) (*British Birds* 78: 562)

1988 Orkney Hoy, 28th May to 8th June (K Fairclough, S Thomson Jnr *et al*) (*British Birds* 82: 534)

1991 Shetland Noss, 11th to 14th June (S J Brown, L A Gilbert *et al*) (*British Birds* 85: 532)

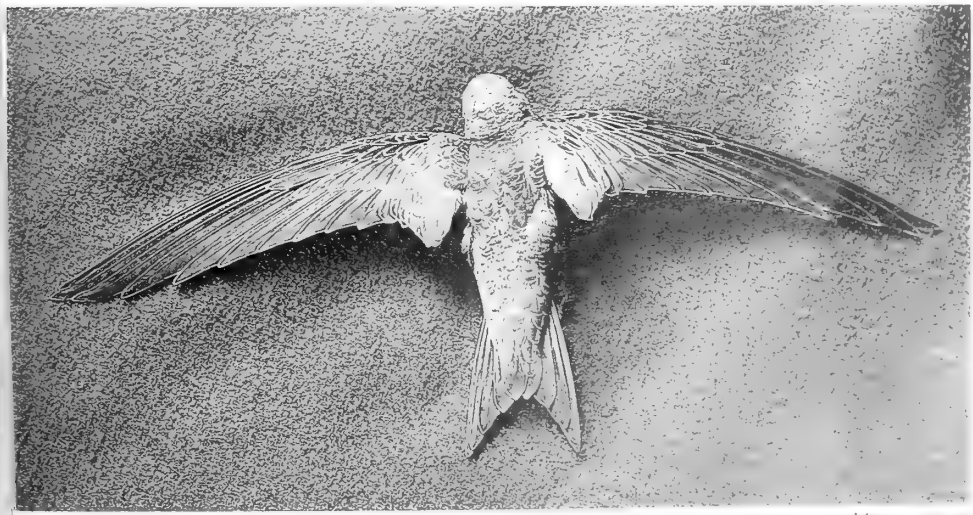
[1931 Fair Isle]

Pallid Swift
Apus pallidus (3, 34)

1996 Orkney North Ronaldsay, m, moribund, 26th October, *A p brehmorum* (M Gray, S D Stansfield *et al*) (*British Birds* 90: 490; *Orkney Bird Report* 1996: 77-78; *Birding Scotland* 1: 124-125), specimen at National Museums of Scotland (NMSZ 2002.85)

1999 Borders Burnmouth, 25th October, taken by Eurasian Sparrowhawk (M & Mrs L Fraser, R D Murray *et al*) (*British Birds* 93: 541; *Birding Scotland* 3: 39)

2001 Fair Isle 2nd October (J M Reid, D N Shaw) (*British Birds* 95: 502)



Pallid Swift, Orkney 1996 Martin Gray

Little Swift
Apus affinis (3, 17)

1985 Fife St Andrews, 29th May (A C Wilson) (*British Birds* 80: 548; *Scottish Birds* 14: 257-258)

1991 Fair Isle 1st November (H R Harrop, C J Orsman, A Prior *et al*) (*British Birds* 85: 533; *Scottish Birds* 16: 276)

1997 Shetland Houbie, Fetlar, 29th May (J & T G Davies, D Suddaby) (*British Birds* 91: 497)

Blue-cheeked Blue-eater
Merops superciliosus (1, 8)

1997 Shetland Bressay, Asta, Tingwall Valley and Lerwick area, 20th June to 3rd July (B Anderson, P Goddard, R Johnson *et al*) (*British Birds* 91: 497; *Birding World* 10: 220-221)

Blue-cheeked Bee-eater, Shetland 1997
Bill Jackson

Lesser Spotted Woodpecker
Dendrocopos minor (3*, -)

1968 Upper Forth/Perth & Kinross Stirling/ Perth boundary, 2, 23rd September; 2 were also suspected at same site during previous 2 years, not seen 1969, 3 were seen there early January 1970 (*Scottish Birds* 6: 210-212)

[1904 Clyde, 1968-72 Perth & Kinross, 1980 Highland]

Calandra Lark
Melanocorypha calandra (4, 9)

1978 Fair Isle 28th April (P J Ewins, I S Robertson, R A Williams *et al*) (*British Birds* 72: 530, *Scottish Birds* 11: 25-26)

1994 Outer Hebrides St Kilda, 21st September (T J Dix, J Vaughan) (*British Birds* 88: 527)

1999 Fair Isle 16th to 17th May (S J Turner *et al*) (*British Birds* 93: 544; *Birding Scotland* 2: 185-186)

2000 Fair Isle 13th May (C A Holt *et al*) (*British Birds* 94: 482)

[c1928 Fair Isle]

Bimaculated Lark
Melanocorypha bimaculata (1, 3)

1976 Fair Isle 8th June (R A Broad, W E Fletcher, S M Whitehouse *et al*) (*British Birds* 70: 428, 72: 462-463)

Crested Lark
Galerida cristata (1, 20)

1952 Fair Isle 2nd November (*British Birds* 46: 211)

[1936 Shetland]

Eurasian Crag Martin
Ptyonoprogne rupestris (1, 6)

1999 Orkney Davey's Brig, Finstown, 3rd May (K Fairclough, E R Meek, E J & S J Williams *et al*) (*British Birds* 93: 544; *Birding Scotland* 2: 137-138)

Blyth's Pipit
Anthus godlewskii (1, 10)

1993 Fair Isle first winter, 31st October to 4th November, trapped 1st (G Anderson, A J Leitch, B Stammers *et al*) (*British Birds* 89: 512; *Birding World* 6: 435-436)

Buff-bellied Pipit
Anthus rubescens (2, 2)

1910 Outer Hebrides St Kilda, immature m, caught, 30th September (*Annals of*

Scottish Natural History 1911: 51-52), specimen at National Museums of Scotland (NMSZ 1910.165.31)

1953 Fair Isle immature, 17th September (*Scottish Naturalist* 1954: 53-54)

Yellow Wagtail
Motacilla flava

'**Sykes's Wagtail**' *M f beema* (1, -)

1910 Fair Isle m, shot, 18th May (*British Birds* 48: 400), specimen at National Museums of Scotland (NMSZ 1910.161.43)

'**Black-headed Wagtail**' *M f feldegg* (2, 9)

1970 Fair Isle m, 7th to 9th May (R H Dennis, J J Harris *et al*) (*British Birds* 64: 364; *Scottish Birds* 6: 215-216)

1984 Lothian Skateraw, m, 28th April (I J Andrews) (*British Birds* 79: 568)

[1925 Dumfries & Galloway, 1936 Shetland, 1952 Lothian]

'**Eastern Blue-headed Wagtail**' *M f simillima* (2, -)

1909 Fair Isle 1st winter f, collected, 9th October (*British Birds* 48: 360 & 400), specimen at National Museums of Scotland (NMSZ 1910.132.15)

1912 Fair Isle 1st winter m, collected, 25th September (*British Birds* 48: 360 & 400), specimen at National Museums of Scotland (NMSZ 1913.50.20)

Cedar Waxwing
Bombycilla cedrorum (1, 2)

1985 Shetland Noss, 25th to 26th June (Ms S Crosthwaite, Mr & Mrs P Leward, C R McKay) (*British Birds* 93: 580-587; *Birding Scotland* 4: 136-139)

Alpine Accentor
Prunella collaris (2, 40)

1908 Fair Isle 6th October (Clark 1912, vol 2, p 146)

1959 Fair Isle 27th to 28th June (P Davies, R H Dennis, C J Pennycuick *et al*) (*British Birds* 53: 426)

[1930 Fair Isle, 1933 Fair Isle]

Common Nightingale
Luscinia megarhynchos

Central Asian race *L m hafizi* (1, 2)

1971 Fair Isle found dead, 30th October (G J Barnes, R A Broad, I S Robertson *et al*) (*British Birds* 65: 341, 73: 519, 94: 485), specimen at National Museums of Scotland (NMSZ 2000.303)

Siberian Rubythroat
Luscinia calliope (2, 3)

1975 Fair Isle first winter m, trapped, 9th to 11th October (R A Broad, A R Lowe, P J Roberts *et al*) (*British Birds* 72: 89-94)

2001 Shetland Hulma Lees, Bixter, m, probably first winter, freshly dead on road, 25th October (D Coutts, J A Johnson *et al*) (*British Birds* 95: 505; *Birding Scotland* 5: 33-34)

Cedar Waxwing, Shetland 1985 Clive McKay

Siberian Blue Robin
Luscinia cyane (1, 2)

2001 **Orkney** North Ronaldsay, first winter m, 2nd October (P A Brown *et al*) (*British Birds* 95: 505; *Birding Scotland* 5: 35-36)

Red-flanked Bluetail
Tarsiger cyanurus (10, 26)

1947 **Shetland** Near Skaw, Whalsay, first winter, shot, 7th October (*Scottish Naturalist* 1948: 6-7)

1971 **Shetland** Fetlar, m, trapped, 31st May to 1st June (D P Cyrus, A R Mainwood *et al*) (*British Birds* 65: 341; *Scottish Birds* 7: 57)

1975 **Fife** Isle of May, first winter, 14th to 15th October, trapped 14th (I Balfour-Paul, J H B Munro, G L Sandeman) (*British Birds* 69: 345, 71: 516; *Scottish Birds* 10: 23)

1976 **Fife** Fife Ness, 28th October (R W Byrne, J B Reid) (*British Birds* 70: 431)

1981 **Fair Isle** first winter, probably m, 29th to 30th September, trapped 29th (P Millburn, N J Riddiford *et al*) (*British Birds* 75: 516)

1984 **Fair Isle** f/immature, 21st September (P V Harvey, K Osborn, N J & Mrs E A Riddiford) (*British Birds* 78: 571)

1993 **Fair Isle** first winter, trapped, 16th September (H J Burgess, M R Lawn, A J Leitch *et al*) (*British Birds* 87: 546)

1998 **Northeast Scotland** Foveran Bushes, Ythan Estuary, m, 27th to 28th September, trapped 27th (P Cosgrove, J Farquhar, M Smits *et al*) (*British Birds* 92: 588; *Birding Scotland* 2: 36-38)

1999 **Borders** St Abbs Head, f/first winter, 16th to 19th October (D K Graham, J R Todd *et al*) (*British Birds* 93: 548; *Birding Scotland* 3: 16-17)

1999 **Shetland** Scatness, f/first winter, 16th to 17th October (P M Ellis, P V Harvey *et al*) (*British Birds* 93: 548; *Shetland Bird Report* 1999: 94; *Birding Scotland* 3: 17)

[1948 Orkney]

Common Redstart
Phoenicurus phoenicurus

Eastern race *P p samamisicus*, '**Ehrenburg's Redstart**' (1, 4)

1976 **Fife** Fife Ness, m, 23rd September (R W Byrne) (*British Birds* 70: 431)

Isabelline Wheatear
Oenanthe isabellina (4, 19)

1979 **Northeast Scotland** Girdleness, immature, 17th October to 10th November, trapped 23rd (M A S Beaman, Dr A G Knox, T P Milson *et al*) (*British Birds* 71: 515, 74: 182-185)

1994 **Shetland** Skaw, Whalsay, 20th September to 10th October (M S Ponsford, K E Vinicombe, M J & M P Willmott *et al*) (*British Birds* 88: 534; *Shetland Bird Report* 1994: 91-93)

1998 **Fair Isle** first winter, 20th to 29th September (P S & R Crockett, I Gordon, C A Holt *et al*) (*British Birds* 92: 591; *Birding Scotland* 2: 40-42)

2001 **Shetland** Funzie, Fetlar, age/sex uncertain, 14th to 15th September (D Houghton, J Moore *et al*) (*British Birds* 95: 507)

Isabelline Wheatear, N E Scotland 1979
Sam Alexander

Pied Wheatear
Oenanthe pleschanka (14, 44)

1909 **Fife** Isle of May, f, shot, 19th October, *O p pleschanka* (*Annals of Scottish Natural History* 1910: 2-4), specimen at National Museums of Scotland (NMSZ 1910.9)

1916 **Orkney** Swona, f, shot, 1st November, *O p pleschanka* (*Scottish Naturalist* 1916: 293)

1976 **Northeast Scotland** Mouth of River Don, Aberdeenshire, adult m, 26th September to 7th October, trapped 4th (Dr A Knox *et al*) (*British Birds* 71: 516)

1988 **Orkney** Stronsay, f, 16th to 19th October (D Garrett, J F Holloway) (*British Birds* 82: 541)

1989 **Fair Isle** first winter m, trapped, 10th October (P V Harvey, A F Silcocks *et al*) (*British Birds* 83: 476; *Scottish Birds* 16: 214, 290)

1991 **Shetland** Sumburgh, first winter m, 9th to 13th October (P M Ellis, A McCall, D Suddaby *et al*) (*British Birds* 85: 537)

1991 **Shetland** Lerwick, first winter m, 17th October (N J Riddiford *et al*) (*British Birds* 85: 537)

1991 **Lothian** Thorntonloch, first winter m, 27th to 30th October (S J Dodgson, P R Gordon *et al*) (*British Birds* 85: 537; *Lothian Bird Report* 1991: 106-107)

1992 **Fife** Fife Ness, f, 18th to 21st September (Dr R W Byrne, A-M Smout *et al*) (*British Birds* 86: 509)

1993 **Northeast Scotland** Donmouth, f, 8th October (S L Agnew, D M Pullan) (*British Birds* 87: 549)

1994 **Orkney** Sanday, first winter m, 22nd October (K Fairclough, E R Meek) (*British Birds* 88: 534)

1999 **Orkney** North Ronaldsay, first winter m, 21st to 24th October, trapped 21st (R McGregor, B Stewart *et al*) (*British Birds* 93: 549)

1999 **Northeast Scotland** Slains, first winter m, 28th October to 1st November (P Shepherd *et al*) (*British Birds* 93: 549)

2000 **Shetland** Toab, m, age uncertain, 17th September (P V Harvey, Dr R Riddington *et al*) (*British Birds* 94: 486; *Shetland Bird Report* 2000: 94-95)

Pied Wheatear, N E Scotland 1999 John Harrison

Black-eared Wheatear
Oenanthe hispanica (13, 58)

1907 **Fair Isle** m, shot, 25th September (*Annals of Scottish Natural History* 1908: 81), specimen at National Museums of Scotland (NMSZ 1908.15.26)

1911 **Outer Hebrides** St Kilda, f, 21st September (Clarke 1912, vol. 2, p. 217)

1949 **Fife** Isle of May, first winter m, trapped, 30th September to 8th October, *O. h. hispanica* (*Scottish Naturalist* 1950: 103-105; *British Birds* 43: 207-208)

1964 **Fair Isle** f, trapped, 19th May (R H Dennis, C S Walker) (*British Birds* 58: 365)

1964 **Fair Isle** first winter f, trapped, 27th September (R H Dennis, E J Wiseman) (*British Birds* 58: 365)

1969 **Caithness** Hill of Many Stanes, Clyth, Lybster, m, 2nd to 4th and 15th July (R W J Smith, D M Stark, M Williams *et al*) (*British Birds* 63: 284; *Scottish Birds* 6: 214)

1979 **Fair Isle** f, trapped, 18th June, *O. h. melanoleuca* (D Buffery, N R Jones, I S Robertson) (*British Birds* 73: 520)

1980 **Fife** Isle of May, adult m, 2nd to 23rd May, trapped 5th (P Lack *et al*) (*British Birds* 74: 483)

1981 **Shetland** Out Skerries, 22nd to 26th September (D Coutts, D M Pullan, E Tait *et al*) (*British Birds* 75: 517)

1983 **Shetland** Out Skerries, m, 5th October (W E Oddie, E Tait) (*British Birds* 77: 549)

1989 **Outer Hebrides** Tigharry, North Uist, m, 19th to 20th May, *O h melanoleuca* (T J Dix, M Shepherd *et al*) (*British Birds* 83: 476)

1990 **Outer Hebrides** Howmore Quarry, South Uist, m, 23rd April, *O h hispanica* (T J Dix, R J & Mrs A Evans) (*British Birds* 84: 483)

1997 **Fair Isle** first summer m, 17th July to 8th September, *O h melanoleuca* (N J Riddiford, Dr R Riddington, J Watt *et al*) (*British Birds* 91: 502)

Desert Wheatear

Oenanthe deserti (14, 76)

1880 **Upper Forth** Gartmorn Dam, Clackmannanshire, m, shot, 26th November (*Proceedings of the Royal Physical Society* 6: 64-67)

1887 **Angus & Dundee** Near Arbroath, Angus, m, shot, 28th December (*Scottish Naturalist* 1888: 346; *Ibis* 1888, 283-284)

1906 **Orkney** Pentland Skerries Lighthouse, m, killed, 2nd June, *O d atrogularis* (*Annals of Scottish Natural History* 1906: 138-139), specimen at National Museums of Scotland (NMSZ 1906.5)

1928 **Fair Isle** m, shot, 6th October, *O d deserti* (*Scottish Naturalist* 1928: 180), specimen at National Museums of Scotland (NMSZ 1928.110.1)

1929 **Fair Isle** m, shot, 26th October, *O e homochroa* (*Scottish Naturalist* 1930: 8)

Desert Wheatear, Lothian 1997 *Iain Leach*

1940 **Fair Isle** immature m, shot, 18th November, *O d deserti* (*British Birds* 38: 229)

1970 **Fair Isle** m, 20th November (G J Barnes, R H Dennis, I S Robertson) (*British Birds* 64: 358; *Scottish Birds* 6: 446)

1984 **Caithness** Freswick, m, 26th December to 13th January 1985, trapped 27th (H Clark, S Laybourne, S A M Manson *et al*) (*British Birds* 78: 572)

1988 **Orkney** Honeysgeo, South Ronaldsay, m, 21st to 30th October (C J Corrigan, K E Hague, Mrs L White *et al*) (*British Birds* 82: 541)

1988 **Shetland** Boddam, f/first winter, 2nd to 3rd November (M Heubeck, M Mellor *et al*) (*British Birds* 82: 541)

1991 **Fair Isle** f, 26th October (H R Harrop, P V Harvey) (*British Birds* 85: 537)

1997 **Northeast Scotland** Girdleness, m, 7th November (H I Scott *et al*) (*British Birds* 91: 503)

1997 **Lothian** Thorntonloch area, f, 9th to 13th November (K Gillon, C Scott *et al*) (*British Birds* 91: 503; *Lothian Bird Report* 1997: 107)

1997 **Lothian** Musselburgh, f, 1st December to 4th January 1998 (A Robinson *et al*) (*British Birds* 91: 503)

Rufous-tailed Rock Thrush
Monticola saxatilis (5, 26)

1910 **Orkney** Pentland Skerries, adult m, shot, 17th May (*Annals of Scottish Natural History* 1910: 148-149), specimen at National Museums of Scotland (NMSZ 1910.87)

1931 **Fair Isle** 8th November (*Scottish Naturalist* 1932: 38)

1936 **Fair Isle** m, 16th October(*Scottish Naturalist* 1937: 75)

1962 **Outer Hebrides** Hirta, St Kilda, f, 17th June (J M Boyd, W E Waters) (*British Birds* 56: 66-67)

1970 **Fair Isle** first year m, trapped, 30th June (R H Dennis, Dr B Marshall *et al*) (*British Birds* 64: 358; *Scottish Birds* 6: 336-337)

Rufous-tailed Rock Thrush, Orkney 1910
Ian Andrews

Blue Rock Thrush
Monticola solitarius (1, 4)

1985 **Argyll** Skerryvore Lighthouse, SSW of Tiree, first summer m, 4th to 7th June, found dead on 8th (A McConnell), skin now at BTO Tring (*British Birds* 88: 130-132)

Siberian Thrush
Zoothera sibirica (3, 6)

1954 **Fife** Isle of May, adult m, 1st to 4th October, trapped 2nd (*Scottish Birds* 8: 114; *British Birds* 48: 21-25)

1984 **Orkney** Widewall, South Ronaldsay, m, 13th November (Mrs R McCutcheon) (*British Birds* 78: 573)

1992 **Orkney** North Ronaldsay, first winter f, 1st to 8th October, trapped 1st (A E Duncan, Dr K F Woodbridge *et al*) (*British Birds* 86: 511; *Birding World* 5: 377-379)

Hermit Thrush
Catharus guttatus (3, 7)

1975 **Fair Isle** 2nd June (R A Broad, P J Roberts, S Rumsey *et al*) (*British Birds* 72: 414-417)

1995 **Fair Isle** first winter, trapped, 19th October (C M Hewson, Dr R Riddington, K A Wilson *et al*) (*British Birds* 89: 516)

1998 **Shetland** Fetlar, 30th April to 1st May (J & T G Davies) (*British Birds* 92: 593; *Shetland Bird Report* 1998: 92-93)

Swainson's Thrush
Catharus ustulatus (5, 19)

1980 **Shetland** Scatness, 25th to 29th October (I G & Mrs C Davison *et al*) (*British Birds* 74: 484)

1990 **Fair Isle** 30th September to 6th October (H R Harrop, J P Hunt *et al*) (*British Birds* 84: 485)

1993 **Orkney** Holm, Mainland, trapped, 21st October (R G Adam, E J Williams) (*British Birds* 87: 552)

1996 **Outer Hebrides** Near Lochskipport, South Uist, 6th October (B Rabbitts) (*British Birds* 90: 497)

2000 **Shetland** Brae, first winter, 12th to 13th October (I Gordon, N Milligan, P Sclater *et al*) (*British Birds* 94: 488; *Shetland Bird Report* 2000: 96)

Grey-cheeked Thrush
Catharus minimus (8, 41)

1953 **Fair Isle** first winter, 5th to 6th October, trapped 5th (*Scottish Naturalist* 1954: 18-20; *British Birds* 47: 266-267)

1958 **Fair Isle** first winter, trapped, 29th October (P Davies) (*British Birds* 52: 316)

1965 **Moray & Nairn** Lossiemouth, Moray, first winter m, found dying, 26th

November (D Careless, Capt. J N Humphreys RN, Dr J G Harrison), now at Harrison Zoological Museum, Sevenoaks (*British Birds* 59: 293; *Scottish Birds* 4: 310)

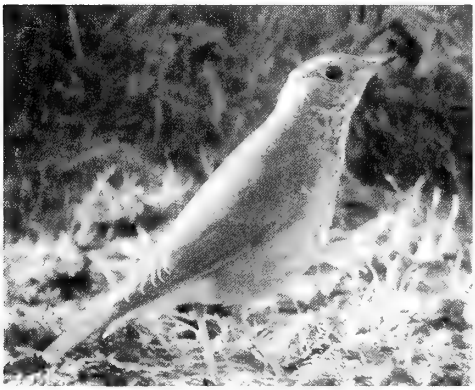
1965 **Outer Hebrides** St Kilda, caught, 29th October, died during night (P Grubb) (*British Birds* 59: 293; *Scottish Birds* 4: 310), specimen at National Museums of Scotland (NMSZ 1965.59)

1982 **Shetland** Voe, 19th to 20th October (C Robson *et al*) (*British Birds* 76: 508)

1989 **Outer Hebrides** Benbecula, first winter, trapped, 29th October (P R Boyer, T J Dix, J J Gordon *et al*) (*British Birds* 83: 481)

1994 **Orkney** North Hoy, 16th October (T Prescott, M D Sutton) (*British Birds* 88: 535)

2001 **Orkney** Stromness, 14th to 16th October, trapped 16th (K Fairclough, K Smith *et al*) (*British Birds* 95: 508; *Birding Scotland* 4: 184-185)



Grey-cheeked Thrush, Orkney 2001Pete Donnelly

Veery

Catharus fuscescens (1, 5)

1995 **Outer Hebrides** Newton, North Uist, 20th to 28th October (P J Benstead *et al*) (*British Birds* 90: 497, 92: 593; *Birding Scotland* 1: 85)

Eyebrowed Thrush, Angus & Dundee 1995 Jim Pattinson

Eyebrowed Thrush

Turdus obscurus (8, 18)

1964 **Outer Hebrides** North Rona, first winter, 16th October (N Picozzi) (*British Birds* 58: 364, 61: 218-223, *Scottish Birds* 3: 419-420; *Birding Scotland* 3: 148)

1978 **Clyde** Lochwinnoch, Renfrewshire, m, 22nd October (D L Clugston) (*British Birds* 72: 535)

1981 **Northeast Scotland** Newburgh, m, 27th May (A Anderson, M V Bell, Dr A G Knox) (*British Birds* 75: 517)

1984 **Orkney** Evie, first winter, 25th to 26th September (E K Meek, J B Ribbands) (*British Birds* 78: 573)

1987 **Fair Isle** first winter, 7th to 15th October, trapped 7th (K Osborn, N J Riddiford *et al*) (*British Birds* 81: 580)

1992 **Fair Isle** first winter, 4th October (N C Green, D Rhymes, Dr R Riddington *et al*) (*British Birds* 86: 511)

1995 **Angus & Dundee** Auchmithie, m, 28th to 30th May (S R Green, T Green *et al*) (*British Birds* 89: 516)

2001 **Outer Hebrides** Hirta, St Kilda, first winter, 1st to 2nd October (A Robinson *et al*) (*British Birds* 95: 508)

Dusky Thrush
Turdus naumanni (3, 10)

1961 **Fair Isle** first winter f, 18th to 21st October, trapped 18th (C Hodgkinson, P Davies, S L White *et al*) (*British Birds* 55: 577; *Scottish Birds* 5: 393-394)

1968 **Shetland** Whalsay, 24th September (J H Simpson) (*British Birds* 62: 476; *Scottish Birds* 5: 392-393)

1975 **Shetland** Firth, 6th to 13th November (D Coutts, B P Walker *et al*) (*British Birds* 69: 344)

[1937 Fair Isle]

American Robin
Turdus migratorius (7, 27)

1961 **Orkney** Grimsetter Aerodrome, 27th May (R O Watson) (*British Birds* 55: 577, *Scottish Birds* 2: 343)

1966 **Dumfries & Galloway** Woodhall Loch, Kirkcudbrightshire, 12th May (E Hailes) (*British Birds* 60: 324; *Scottish Birds* 4: 376)

1967 **Shetland** Foula, 11th and 16th November (J R & Mrs J A Gear) (*British Birds* 61: 349; *Scottish Birds* 5: 220)

1975 **Outer Hebrides** St Kilda, 14th January to 15th February (C Brown *et al*) (*British Birds* 69: 345)

1981 **Caithness** Achins, Reay, adult, 5th November (Dr D M Edge, E W E Maughan) (*British Birds* 76: 509)

1982 **Shetland** Foula, m, 3rd to 16th November (Mrs S Gear *et al*) (*British Birds* 76: 509)

1988 **Northeast Scotland** Inverbervie, first winter m, 24th to 29th December (Mrs J Evans, R McCurley *et al*) (*British Birds* 82: 542)

Cetti's Warbler
Cettia cetti (1, -)

1993 **Lothian** Leith, Edinburgh, m, found freshly dead below windows, 4th October (M Shepherd) (*Scottish Birds* 17: 176-177; *Lothian Bird Report* 1993: 120-122; see *Scottish Birds* 19: 260 for correction of date to 4th), specimen at National Museums of Scotland (NMSZ 1993.181), had been ringed on 24th August, near Calais, France

American Robin, N E Scotland 1988
Sam Alexander

River Warbler
Locustella fluviatilis (15, 29)

1961 **Fair Isle** first winter, 24th to 25th September, trapped 24th (G J Barnes, P Davies, P J Slater *et al*) (*British Birds* 55: 137-138)

1969 **Fair Isle** trapped, 16th September (K Armstrong, R H Dennis *et al*) (*British Birds* 63: 284)

1981 **Fair Isle** 23rd to 24th May, m, found dead 25th (P Alker, N J Riddiford, C D Rowley *et al*) (*British Birds* 75: 518), specimen at National Museums of Scotland (NMSZ 2002.87)

1982 **Fair Isle** first year, trapped, 22nd September (D G Borton, N J Riddiford *et al*) (*British Birds* 76: 509)

1982 **Fair Isle** adult, 24th to 26th, trapped 24th (M Parr, N J Riddiford *et al*) (*British Birds* 76: 509)

1984 **Fair Isle** 7th June (N J & Mrs E A Riddiford) (*British Birds* 78: 574)

1993 **Fair Isle** m, 25th to 28th May, trapped 25th (I Brown, P A Jenks, A J Leitch *et al*) (*British Birds* 87: 552)

1993 **Fair Isle** first winter, 26th to 27th September, trapped 26th (T R Cleeves, Dr S & Mrs P Cox, A J Leitch *et al*) (*British Birds* 87: 552)

1993 **Shetland** Out Skerries, first winter, 9th to 10th October, trapped 9th (J M & T P Drew, P M Ellis, E Tait *et al*) (*British Birds* 87: 552; *Shetland Bird Report* 1993: 121)

1994 **Fife** Clatto Reservoir, in song, 16th to 25th July (S T Buckland, C & Mrs A-M Smout, S Taylor *et al*) (*British Birds* 88: 538)

1995 **Fair Isle** 27th May (I Barton, K Rosewarne *et al*) (*British Birds* 89: 517)

1995 **Shetland** Foula, 14th September (D J Rigby) (*British Birds* 90: 499)

1995 **Shetland** Lerwick, 14th September (J Coutts, Mrs M Leslie *et al*) (*British Birds* 89: 517)

1995 **Orkney** North Ronaldsay, first winter, trapped, 15th September (M Gray, N E Robinson, S D Stansfield *et al*) (*British Birds* 89: 517)

1995 **Shetland** Sumburgh, first winter, 15th to 17th September, trapped 17th (R J Wardle *et al*) (*British Birds* 89: 517)

Savi's Warbler

Locustella luscinioides (7*, 609 since 1958)

1908 **Fair Isle** 2, f shot, 14th May (*Annals of Scottish Natural History* 1909: 73; Baxter & Rintoul 1953, p.159), specimen at National Museums of Scotland (NMSZ 1908.94.19)

1981 **Fair Isle** first summer, trapped, 24th June (D G Borton, N J Riddiford *et al*) (*British Birds* 75: 518)

1986 **Fair Isle** trapped, 7th June (*Fair Isle Bird Observatory Report* 1986: 48)

1993 **Fair Isle** 4th to 6th May, trapped (*Fair Isle Bird Observatory Report* 1993: 32)

1995 **Shetland** Whalsay, 29th to 30th May (B Marshall *et al*) (*Shetland Bird Report* 1995: 92-93)

1996 **Fair Isle** 24th to 31st May (*Fair Isle Bird Observatory Report* 1996: 62)

Thick-billed Warbler, Shetland 2001 Ken Shaw

Thick-billed Warbler

Acrocephalus aedon (3, 3)

1955 **Fair Isle** trapped, 6th October (*British Birds* 49: 89-93)

1971 **Shetland** Whalsay, trapped, 23rd September, released Lerwick, 24th, found dead 25th (Dr B Marshall, J H Simpson, R J Tulloch *et al*) (*British Birds* 65: 342; *Scottish Birds* 7: 262)

2001 **Shetland** Out Skerries, first winter, trapped, 14th September (P M Ellis, P V Harvey, R Riddington, K D Shaw *et al*) (*British Birds* 95: 511; *Birding Scotland* 4: 154-158)

Eastern Olivaceous Warbler

Hippolais pallida (3, 10)

1967 **Fife** Isle of May, trapped, 24th to 26th September, when killed by Great Grey Shrike *Lanius excubitor* (D A I Baty, W M Morrison, A D K Ramsay *et al*) (*British Birds* 61: 350; *Scottish Birds* 10: 24-25)

1995 **Fair Isle** 5th to 13th June, trapped 5th (Dr R Riddington, K A Wilson *et al*) (*British Birds* 89: 517; *Birding World* 8: 218-220)

2000 **Northeast Scotland** Collieston, 13th to 21st September, trapped 15th (P A A Baxter, P S Crockett *et al*) (*British Birds* 94: 489; *Birding Scotland* 4: 11-14)

All the above records refer to the race *H p elaeica*.

Syke's Warbler
Hippolais rama (1, 2)

1993 **Shetland** Seafield, Lerwick, 22nd October to 9th November, trapped 24th (W Jackson, K Osborn *et al*) (*British Birds* 87: 554; *Birding World* 6: 437-438)

Marmora's Warbler
Sylvia sarda (1, 5)

1993 **Borders** St Abbs Head, in song, 23rd to 27th May (T P Drew, K J Rideout *et al*) (*British Birds* 87: 554; *Birding World* 6: 182)

Dartford Warbler
Sylvia undata (2, -)

1983 **Borders** St Abbs Head, m, in song, 18th May (R D Murray *et al*) (*Scottish Birds* 13: 52-53)

2000 **Fair Isle** probable m, 29th April to 1st May (H E Maggs *et al*) (*Fair Isle Bird Observatory Report* 2000: 74; *Birding Scotland* 3: 129-130)

Sardinian Warbler
Sylvia melanocephala (9, 59)

1967 **Fair Isle** m, 26th to 27th May, trapped 26th (G J Barnes, R H Dennis, W N Landells *et al*) (*British Birds* 60: 483-485)

1981 **Fife** Isle of May, m, 30th May (N Aebischer *et al*) (*British Birds* 75: 521)

1988 **Orkney** Birsay, m, 24th to about 27th April (P & V C Reynolds *et al*) (*British Birds* 82: 548)

Easter Olivaceous Warbler, N E Scotland 2000
Jim Pattinson

1992 **Orkney** North Ronaldsay, first summer f, 25th to 27th May, trapped, 25th (P J Donnelly, A E Duncan *et al*) (*British Birds* 86: 515)

1992 **Orkney** Stronsay, adult m, 29th to 31st October (J F & Mrs S M Holloway, Mr & Mrs N Kent) (*British Birds* 86: 515)

1992 **Shetland** Cunningsburgh, adult m, 24th July to 11th November (J Nicolson, Mr & Mrs L Smith, D Suddaby) (*British Birds* 86: 515; *Shetland Bird Report* 1993: 112-113)

1994 **Outer Hebrides** Hirta, St Kilda, m, 23rd May (T J Dix, D Lee, J Vaughan *et al*) (*British Birds* 88: 541)

1994 **Fair** Isle m, 23rd to 28th June (M Campbell, G Thompson *et al*) (*British Birds* 88: 541)

1998 **Shetland** Sumburgh, f/first summer m, 10th May (M Mellor, G Petrie, G Robertson *et al*) (*British Birds* 92: 597; *Shetland Bird Report* 1998: 93)

Rüppell's Warbler
Sylvia rueppelli (2, 5)

1977 Shetland Dunrossness, adult m, in song, 13th August to 17th[1] September, trapped 15th August (R P Martins, J D Okill *et al*) (*British Birds* 72: 537, [1]74: 279-283)

1990 Shetland Whalsay, m, 3rd to 19th October, trapped 3rd (J L Irvine, Dr B Marshall, M Williamson *et al*) (*British Birds* 84: 492)

Orphean Warbler
Sylvia hortensis (1, 6)

1982 Northeast Scotland Seaton Park, Aberdeen, trapped, 10th October (R Duncan) (*British Birds* 77: 552; *Birding Scotland* 3: 5)

Hume's Leaf Warbler
Phylloscopus humei (5, 47)

1991 Angus & Dundee Windyhills Farm, Auchmithie, 13th October (G Addison, C Campbell, M S Scott *et al*) (*British Birds* 91: 508)

1994 Orkney Cara, South Ronaldsay, 4th to 6th November (M Gray, E R Meek *et al*) (*British Birds* 91: 508)

1994 Fife Isle of May, 10th November (A Robinson) (*British Birds* 91: 508)

1994 Northeast Scotland Bullers of Buchan, 10th to 13th November (T W Marshall, A Webb *et al*) (*British Birds* 91: 508)

2000 Fife Crail, 7th to 8th November (N Elkins, S Paterson, R Shand *et al*) (*British Birds* 94: 493)

Eastern Bonelli's Warbler
Phylloscopus orientalis (1, 3)

1998 Shetland Sumburgh, 27th to 28th August (S Croft, I Dillon, J N Dymond, P V Harvey *et al*) (*British Birds* 92: 599; *Birding Scotland* 1: 154-159; *Shetland Bird Report* 1998: 94)

Western Bonelli's Warbler
Phylloscopus bonelli (6, 56)

1961 Fair Isle first winter, trapped, 22nd September (E J Wiseman, W H Truckle, S L White *et al*) (*British Birds* 55: 278)

1974 Shetland Sumburgh, 5th September (F A Clements, D Wills *et al*) (*British Birds* 71: 522)

1979 Shetland Whalsay, first winter, 21st to 22nd September, trapped 22nd (Dr B Marshall) (*British Birds* 73: 525)

1986 Orkney Graemeshall, Holm, first winter, 26th October to 15th November, trapped 26th, retrapped 14th (R G Adams, E R Meek *et al*) (*British Birds* 80: 562)

1994 Orkney North Ronaldsay, 11th to 13th May (S D Stansfield, H Thurgate *et al*) (*British Birds* 88: 542)

1995 Shetland Sumburgh, 13th to 18th September, trapped 16th (A Brown, J F & Mrs D R Cooper, I S Robertson *et al*) (*British Birds* 89: 520, 92: 599)

Collared Flycatcher
Ficedula albicollis (14, 23)

1947 Shetland Whalsay, adult m, shot, 11th May (*Scottish Naturalist* 1948: 51)

1963 Orkney Newhill, Harray, m, 30th May (E Balfour, G Flett) (*British Birds* 57: 275; *Scottish Birds* 2: 478)

1975 Shetland Out Skerries, m, 13th May (A R Lowe, W E Oddie) (*British Birds* 69: 351; *Scottish Birds* 10: 181-182)

1976 Shetland Out Skerries, f, 25th May (A R Lowe) (*British Birds* 70: 436; *Scottish Birds* 10: 182)

1979 Shetland Bressay, m, 23rd to 24th May (Mrs C Filmore, J D Okill *et al*) (*British Birds* 73: 525)

1980 Orkney Stronsay, m, 31st May (A D K Ramsay) (*British Birds* 74: 487)

1986 Fair Isle first winter, trapped, 8th October (A J Livett, M G Pennington, N J Riddiford *et al*) (*British Birds* 81: 586; *Birding Scotland* 4: 39-41)

1992 **Outer Hebrides** Hirta, St Kilda, m, 24th May (T J Dix, J Vaughan) (*British Birds* 86: 523)

1995 **Shetland** Tresta, m, 5th June (H R Harrop, M Mellor) (*British Birds* 89: 520)

1997 **Angus & Dundee** Ethie Mains, first summer m, 31st May to 1st June (S R Green *et al*) (*British Birds* 91: 510)

1998 **Fair Isle** m, 28th May (C A Holt, J M Reid, S J Turner *et al*) (*British Birds* 92: 599)

1999 **Northeast Scotland** Cove, Aberdeen, m, 30th April to 1st May (P A A Baxter *et al*) (*British Birds* 93: 560; *Birding Scotland* 2: 138-139)

1999 **Orkney** North Ronaldsay, f, 31st May (P A Brown, S Holloway, T Wilson *et al*) (*British Birds* 94: 494; *Birding World* 12: 231-233)

1999 **Shetland** Skaw, Unst, first summer m, 13th June (M G Pennington *et al*) (*British Birds* 93: 560)

Brown Shrike

Lanius cristatus (2, 3)

1985 **Shetland** Sumburgh, adult, 30th September to 2nd October (M S Chapman, D Coutts, G J Fitchett *et al*) (*British Birds* 86: 600-604)

2000 **Fair Isle** first winter f, trapped, 21st October (J N Dymond, D N Shaw *et al*) (*British Birds* 94: 495; *Birding World* 13: 420-422; *Birding Scotland* 4: 33-35)

Isabelline Shrike

Lanius isabellinus (13, 60)

1950 **Fife** Isle of May, adult m winter, 26th September (*British Birds* 44: 217-219)

1960 **Fair Isle** adult m, 12th to 13th May, trapped 13th (P Davies *et al*) (*British Birds* 54: 209-210)

1979 **Fair Isle** first winter, 24th October (Dr D T & Mrs P Parkin, I S Robertson) (*British Birds* 73: 525)

1981 **Fair Isle** adult m, 9th to 12th October (G Bashford, N J Riddiford *et al*) (*British Birds* 75: 525)

Collared Flycatcher, N E Scotland 1999 *Paul Baxter*

Isabelline Shrike, Borders 1999 Paul Baxter

1987 Shetland Eswick, 23rd October (P V Harvey, M Heubeck, T D Rogers *et al*) (*British Birds* 82: 553)

1988 Shetland Catfirth, first winter, 17th to 23rd October (M S Chapman, A Graham *et al*) (*British Birds* 82: 553)

1989 Borders/Lothian Dunglass, Berwickshire/ East Lothian, f, trapped, 13th September (T W Dougall, D Patterson) (*British Birds* 83: 486; *Borders Bird Report* 11: 78)

1991 Orkney North Ronaldsay, m, 28th October to 2nd November (M Gray *et al*) (*British Birds* 86: 524)

1993 Fife Fife Ness, first winter, 4th to 9th November (D E Dickson, R Shand *et al*) (*British Birds* 87: 560)

1994 Fair Isle f, 23rd to 24th August, trapped 23rd (Dr R Riddington, N C Ward *et al*) (*British Birds* 88: 543)

1995 Orkney Netherstove, Deerness, m, 10th to 17th September (K E Hague, E R Meek *et al*) (*British Birds* 89: 521)

1997 Orkney North Ronaldsay, first winter, trapped, 30th November (S D Stansfield *et al*) (*British Birds* 91; 510)

1999 Borders Burnmouth, first winter, 24th to 31st October (P R Gordon *et al*) (*British Birds* 93: 560; *Birding Scotland* 3: 36-37)

Southern Grey Shrike

Lanius meridionalis (6, 15)

1956 Fair Isle first winter, trapped, 21st September (*British Birds* 50: 246-249)

1964 Fair Isle first winter, trapped, 18th October (G L Barnes, R H Dennis, E J Wiseman *et al*) (*British Birds* 58: 368)

1994 Orkney North Ronaldsay, first winter m, 14th September to 16th October, trapped 5th (A J Leitch, S D Stansfield, Dr K F Woodbridge *et al*) (*British Birds* 88: 543)

1994 Shetland Boddam, probably first winter, 7th to 10th November (H R Harrop, R Reeves, I S Robertson *et al*) (*British Birds* 88: 543; *Shetland Bird Report* 1994: 90-91)

1994 Orkney Papa Westray, 11th to 26th November (Mrs A Hourston, J Rendall *et al*) (*British Birds* 88: 543)

2000 Orkney Windwick, South Ronaldsay, first winter, 22nd September (K Fairclough, A C Knight) (*British Birds* 94: 496)

All the above records refer to the race *L m pallidirostris*.

Spotted Nutcracker

Nucifraga caryocatactes (3, 73)

1868 Orkney Sanday, shot, 1st October (Buckley & Harvey Brown 1891, p.125)

1868 Highland Invergary, Invernessshire, shot, October (*Zoologist* 1868: 1484, 1519)

1968 Shetland Lerwick, 21st to 23rd August (D Coutts, J Gray) (*British Birds* 63: 371; *Scottish Birds* 7: 56)

[2 undated old Scottish records, Pre 1833 Northeast Scotland, 1876 Lothian, ?1891 Dumfries & Galloway]

Spanish Sparrow

Passer hispaniolensis (1, 6)

1993 Orkney North Ronaldsay, male, 11th to 19th August, trapped 11th (A E Duncan, J Reid, S D Stansfield *et al*) (*British Birds* 87: 561; *Birding World* 6: 309-311)

Red-eyed Vireo
Vireo olivaceus (6, 96)

1985 **Caithness** Wick, 13th to 16th October (K W Banks *et al*) (*British Birds* 81: 588)

1988 **Outer Hebrides** Newton Plantation, North Uist, 1st to 7th October (T J Dix, B C Forrester, J J Gordon *et al*) (*British Birds* 82: 555)

1988 **Caithness** Thurso, 8th November (P M Miller) (*British Birds* 86: 525)

1991 **Lothian** Barns Ness, 13th to 14th October (D Garratt *et al*) (*British Birds* 85: 548; *Lothian Bird Report* 1991:111-112)

1992 **Argyll** Arinagour, Coll, 3rd October (I D Bullock) (*British Birds* 86: 525)

2000 **Outer Hebrides** Stornoway, Lewis, 21st October (R D Wemyss) (*British Birds* 94: 497)

European Serin
Serinus serinus (6, -)

1911 **Lothian** southern suburbs of Edinburgh, m, caught, 9th November (*Scottish Naturalist* 1912: 11), specimen at National Museums of Scotland (NMSZ 1911.107)

1914 **Fair Isle** f, shot, 22nd May (*Scottish Naturalist* 1915: 102)

European Serin, Lothian 1911 *Ian Andrews*

1957 **Fair Isle** m, sang, 25th May † (P Davies) (*British Birds* 51: 199)

1964 **Fair Isle** m, 29th May (R H Dennis, C S Walker) (*British Birds* 58: 369)

1968 **Shetland** Scalloway, 17th November (R Duthie) (*British Birds* 62: 487; *Scottish Birds* 5: 399)

1998 **Borders** St Abbs Head, f, 29th to 30th May (C McGuigan *et al*) (*Borders Bird Report* 18: 98-99; *Birding Scotland* 1: 122-123)

Arctic Redpoll
Carduelis hornemanni

Northwest Greenland race *C h hornemanni*, '**Hornemann's Redpoll**' (19*, ?)

1905 **Fair Isle** 3, adult m and 2 immatures, 18th September (Clarke 1912, vol 2, p. 110)

1905 **Fair Isle** adult m, 29th September (Clarke 1912, vol 2, p. 110)

1905 **Fair Isle** immature, 10th October (Clarke 1912, vol 2, p. 110)

1905 **Shetland** Unst, shot, between 9th and 19th October (*Annals of Scottish Natural History* 1910: 54)

1925 **Fair Isle** f, shot, 12th November (*Scottish Naturalist* 1926: 4), specimen at National Museums of Scotland (NMSZ 1926.19.1)

1932 **Fair Isle** September (Baxter & Rintoul 1953, vol 1, p 57)

1935 **Fair Isle** October (Baxter & Rintoul 1953, vol 1, p 57)

1950 **Fair Isle** autumn (Williamson 1965, p 292)

1962 **Outer Hebrides** Uigen, Lewis, m, found dead, 8th April (W A J Cunningham, C E Palmer, D Weir) (*British Birds* 56: 407)

1965 **Fair Isle** trapped, 4th to 6th November (G J Barnes, R H Dennis) (*British Birds* 59: 297)

1980 **Shetland** Fetlar, 2, 13th October (J N Dymond) (*British Birds* 74: 489)

1987 **Shetland** Whalsay, 28th April to at least 1st May (J L Irvine, Dr B Marshall, the late A Sandison) (*British Birds* 82: 555)

1988 Orkney Stronsay, 5th to 7th November (J F & Mrs S M Holloway) (*British Birds* 82: 555)

1989 Fair Isle first winter m, 4th to 18th October, trapped 5th, 14th (T R Cleeves, P Howlett, T M Melling *et al*) (*British Birds* 83: 488, 94: 498)

1997 Shetland Lambaness, Unst, 10th October (P V Harvey, M G Pennington, S C Votier) (*British Birds* 91: 512)

1998 Shetland Out Skerries, trapped, 29th September to 2nd October (S J Dodgson, E Tait) (*British Birds* 92: 602)

[The following are listed as probables: **1978 Fair Isle** 26th December (Dymond 1991), **1981 Fair Isle** 15th to 17th October (Dymond 1991 "probably this race"), **1989 Fair Isle** second bird, 18th October (Dymond 1991), **1990 Fair Isle** 23rd April (Dymond 1991 "probably this race"), **1999 Caithness** Barrock, first winter, 6th to 7th February (J Smith *et al*) (*British Birds* 94: 498)]

[Argyll 1920]

Trumpeter Finch
Bucanetes githagineus (3, 7)

1971 Highland Handa, Sutherland, 8th to 9th June (C R & Mrs J M Tubbs) (*British Birds* 67: 342; 70: 45-49)

1981 Orkney Sanday, m, 26th to 28th May (A & Mrs F Cormack, J E Crossley, Dr K F Woodbridge *et al*) (*British Birds* 76: 523) [Booth *et al* 1984 give dates as 25th to 29th]

1992 Highland Balnakeil, near Durness, Sutherland, m, 4th June (Dr M H Blattner *et al*) (*British Birds* 86: 528)

Pine Grosbeak
Pinicola enucleator (3, 10)

1954 Fife Isle of May, adult f, trapped, 8th to 9th November (*British Birds* 48: 133-134)

1992 Shetland Lerwick, m, probably first year, in song, 25th March to at least 25th April (P Barry *et al*) (*British Birds* 86: 528; *Shetland Bird Report* 1992: 110; *Birding World* 5:133-137)

Pine Grosbeak, Shetland 1992 *Kevin Osborn*

2000 Shetland Maywick, first winter m, 9th November (P Bentley, H R Harrop *et al*) (*British Birds* 94: 498; *Shetland Bird Report* 2000: 97-98; *Birding World* 13: 448-450; *Birding Scotland* 4: 32)

[1769 Northeast Scotland, Pre 1789? Dumfries & Galloway, Pre-1808 Lothian, Pre 1813 Angus & Dundee, Pre 1833? Borders, 1938 Highland]

Evening Grosbeak
Hesperiphona vespertina (2, 2)

1969 Outer Hebrides St Kilda, adult m, 26th March (N Picozzi) (*British Birds* 64: 189-194; *Birding Scotland* 2: 63-64)

1980 Highland Nethy Bridge, Invernessshire, adult f, 10th to 25th March (H Marshall) (*British Birds* 74: 491)

Black-and-white Warbler
Mniotilta varia (1, 13)

1936 Shetland Vatster, Tingwall, found dead, mid October (*British Birds* 53: 98), specimen at National Museums of Scotland (NMSZ 1936.84)

Tennessee Warbler
Vermivora peregrina (4, 4)

1975 Fair Isle immature, trapped, 6th to 20th September (R A Broad, C D Heard, G Walbridge *et al*) (*British Birds* 74: 90-94)

1975 **Fair Isle** immature, trapped (different bird), 24th September (R A Broad, P J Roberts *et al*) (*British Birds* 69: 354)

1982 **Orkney** Holm, trapped, 5th to 7th September (E R Meek *et al*) (*British Birds* 76: 524)

1995 **Outer Hebrides** Hirta, St Hilda, 20th September (T J Dix, K J Douglas) (*British Birds* 89: 524)

Tennessee Warbler, Orkney 1982 *Eric Meek*

Yellow Warbler
Dendroica petechia (2, 3)

1990 **Shetland** Helendale, Lerwick, m, 3rd to 4th November (Mrs M Leslie, D Suddaby *et al*) (*British Birds* 84: 500; 86: 530)

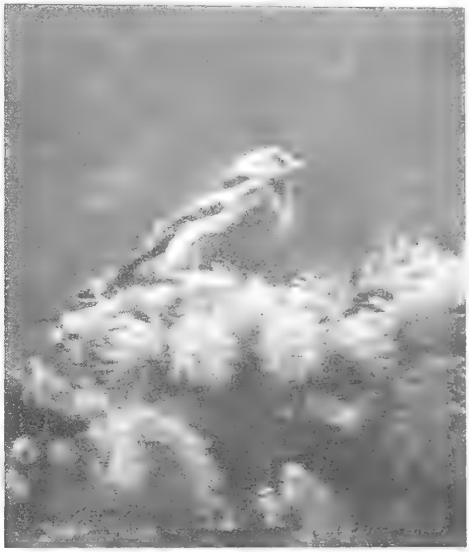
1992 **Orkney** North Ronaldsay, first winter m, trapped, 24th August (A E Duncan, A Mitchell, K A Wilson *et al*) (*British Birds* 86: 530)

Chestnut-sided Warbler
Dendroica pensylvanica (1, 2)

1985 **Shetland** Fetlar, first year, 20th September (M A & Mrs V M Peacock) (*British Birds* 86: 57-61)

Blackburnian Warbler
Dendroica fusca (1, 2)

1988 **Fair Isle** first winter m, 7th October (G R Avery, N J Riddiford, M J Wilmott *et al*) (*British Birds* 83: 489)



Cape May Warbler, Clyde 1977 *Tom Byars*

Cape May Warbler
Dendroica tigrina (1, 1)

1977 **Clyde** Paisley Glen, Renfrewshire, singing m, 17th June (T Byars, H Galbraith) (*British Birds* 73: 2-5; *Birding Scotland* 3: 136-140)

Yellow-rumped Warbler
Dendroica coranata (5, 16)

1977 **Fair Isle** m, 18th May (R A Broad, Mr & Mrs J Woodland) (*British Birds* 71: 526)

1982 **Outer Hebrides** Newton, North Uist, 22nd to 23rd October (R H & Mrs M Dennis, C H Pickup) (*British Birds* 76: 524)

1995 **Orkney** North Ronaldsay, first winter, 13th October (S D Stansfield *et al*) (*British Birds* 89: 525; *Orkney Bird Report* 1995: 69-70)

1999 Fair Isle first summer m, 3rd to 5th June (C A Holt *et al*) (*British Birds* 93: 562; *Birding World* 12: 239)

1999 Outer Hebrides Grogarry, South Uist, 17th October (B Rabbitts, A Stevenson *et al*) (*British Birds* 93: 562; *Birding Scotland* 2: 185)

Yellow-rumped Warbler, Outer Hebrides 1999
Andrew Stevenson

Blackpoll Warbler
Dendroica striata (4, 31)

1985 Shetland Whalsay, trapped, 30th September to 3rd October (J L Irvine, Dr B Marshall *et al*) (*British Birds* 79: 580; *Scottish Bird Report* 1987: 50)

1990 Shetland Sumburgh, 6th October (S J Dodgson, G K Gordon *et al*) (*British Birds* 84: 500)

1991 Fair Isle 30th September (M I Dowie, T G Francis, D Suddaby *et al*) (*British Birds* 85: 550)

1996 Outer Hebrides Stornoway, Lewis, 26th to 29th October (R D Wemyss) (*British Birds* 90: 509)

American Redstart
Setophaga ruticilla (1, 5)

1982 Argyll Portnahaven, Islay, f/immature, 1st November (Mrs P J S Dawson, D Macleod) (*British Birds* 76: 525; *Birding Scotland* 4: 186-188)

Ovenbird
Seiurus aurocapilla (1, 3)

1973 Shetland Out Skerries, trapped, 7th to 8th October (I S & Mrs S Robertson, R J Tulloch *et al*) (*British Birds* 68: 453-455)

Common Yellowthroat
Geothlypis trichas (2, 7)

1984 Shetland Fetlar, m, 7th to 11th June (Misses J & M Gates, D Walker *et al*) (*British Birds* 78: 582; *Scottish Birds* 14: 124)

1997 Shetland Baltasound, Unst, first summer f, 16th to 23rd May (M J McLeod, M G Pennington *et al*) (*British Birds* 91: 513; *Birding World* 10: 185-186)

Hooded Warbler
Wilsonia citrina (1, 2)

1992 Outer Hebrides Hirta, St Kilda, 10th September (T J Dix, J Vaughan) (*British Birds* 86: 530; *Scottish Birds*: 19: 123; *Birding World* 5: 380-381; *Birding Scotland* 3: 54-55)

Savannah Sparrow
Passerculus sandwichensis (1, 2)

1987 Fair Isle first winter, 30th September to 1st October, trapped 30th, *P s sandwichensis* (P M Ellis, N J Riddiford *et al*) (*British Birds* 81: 590, 85: 561-564)

Song Sparrow
Melospiza melodia (3, 7)

1959 Fair Isle m, 27th April to 10th May, trapped 27th (P Davies, R H Dennis *et al*) (*British Birds* 52: 419-421, 53: 429)

1979 Fair Isle m, trapped, 17th April to 7th May (D Buffery, N R Jones, I S Robertson *et al*), and Sumburgh, 10th June (G Bashford, M S Chapman *et al*) [Although there was no sign of a ring on the Sumburgh bird, BBRC consider only 1 bird to be involved]

1989 **Fair Isle** m, trapped, 11th to 26th April (P V Harvey, P Howlett *et al*) (*British Birds* 83: 489)

White-crowned Sparrow
Zonotrichia leucophrys (1, 3)

1977 **Fair Isle** 15th to 16th May, trapped 15th (R A Broad, J Potter *et al*) (*British Birds* 72: 542, 73: 466-470)

White-throated Sparrow
Zonotrichia albicollis (13, 21)

1909 **Outer Hebrides** Eilean Mór, Flannan Isles, adult m, shot, 18th May (*Annals of Scottish Natural History* 1909: 246; *British Birds* 53: 97-98), specimen at National Museums of Scotland (NMSZ 1934.61.1876)

1966 **Fair Isle** trapped, 13th May (G Barnes, R H & Mrs M T Dennis) (*British Birds* 60: 332)

1970 **Caithness** Sordale, Thurso, for about 4 months from early May (Dr P McMorran, P J Rodger, D M Stark) (*British Birds* 64: 366; *Scottish Birds* 6: 339)

1971 **Shetland** Whalsay, 1st November (J H Simpson) (*British Birds* 65: 349)

1973 **Shetland** Out Skerries, 5th to 15th May (D Coutts, I S Robertson, R J Tulloch *et al*) (*British Birds* 67: 34)

1978 **Fair Isle** trapped, 17th June (P J Ewins, I S Robertson, R A Williams *et al*) (*British Birds* 72: 542)

1987 **Shetland** Norwick, Unst, 13th to 15th May (G Gray, M Sinclair, I Spence *et al*) (*British Birds* 81: 591)

1987 **Shetland** Kergord, 16th June (C & D K Lamsdell) (*British Birds* 81: 591)

1989 **Shetland** Frakkafield, Lerwick, 27th to 28th May (Father P Barry *et al*) (*British Birds* 83: 489)

1996 **Orkney** North Ronaldsay, 23rd to 27th May (M Anderson, S D Stansfield *et al*) (*British Birds* 90: 510; *Orkney Bird Report* 1996: 78-79)

1996 **Shetland** Voe, first winter, 26th September to 7th October (T J Wilson *et al*) (*British Birds* 90: 510)

1998 **Shetland** Noss, 8th June (J G Brown, A Upton, S C Votier *et al*) (*British Birds* 92: 603)

2001 **Sea area Dogger** '*Maerske Curlew*' oil installation, 56° 44' N 01° 17' E, 6th June (L Simpson) (*British Birds* 95: 520)

[1867 Northeast Scotland]

White-throated Sparrow, Orkney 1996 J Bishop

Dark-eyed Junco
Junco hyemalis (6, 22)

1966 **Shetland** Foula, 1st May (Mrs D M Gear) (*British Birds* 60: 332[1]). [[1]Originally square bracketed by BBRC, but apparently now included in their totals]

1967 **Shetland** Foula, 10th May (A R Mainwood) (*British Birds* 61: 358)

1969 **Shetland** Out Skerries, 7th May (I S Robertson) (*British Birds* 63: 291; *Scottish Birds* 6: 53-54)

1977 **Highland** Glen Affric, Invernessshire, 19th May (Mrs J Cardew, R J Miller) (*British Birds* 71: 527)

1992 Clyde Hamilton, 3rd to 4th May (I & Mrs J Sheddon *et al*) (*British Birds* 86: 531; *Scottish Birds* 16: 280)

2000 Caithness Duncansby, m, 26th to 29th April (S Laybourne, D Watt) (*British Birds* 94: 498)

Dark-eyed Junco, Caithness 2000 Eric Maughan

Black-faced Bunting

Emberiza spodocephala (1, 4)

2001 Fair Isle 20th to 24th October (P R French *et al*) (*British Birds* 95: 520; *Birding Scotland* 5: 37-38)

Yellowhammer

Emberiza citrinella

Continental European race, *E c citrinella* (2+, -)

1911 Fair Isle shot, 21st March, now in the National Museums of Scotland (NMSZ 1912.38.6) (Baxter & Rintoul 1953, p. 747)

1951 Fair Isle 28th April (*Fair Isle Bird Observatory Bulletin* 1951 2: 18; Baxter & Rintoul 1953, p 747)

The status of this race in Scotland is unclear. These are the only published records, but it is possible that most, if not all, migrants in Shetland are of this race, and it could therefore be annual in small numbers.

Cirl Bunting

Emberiza cirlus (12*, -)

1920 Argyll St Catherines, Upper Loch Fyne, pair, 6th June, m also on 10th (*British Birds* 14: 91)

1928 Ayrshire Eglinton, m (possibly in company of f), 8th May (*Scottish Naturalist* 1928: 94; Paton & Pike 1929, p.31)

1928 Angus & Dundee Parkhill, caught, 27th November (*Scottish Naturalist* 1929: 111)

1935 Fife Isle of May, f, trapped, 2nd September (*Scottish Naturalist* 1936: 128-129)

1935 Fife Isle of May, immature m, caught, 22nd September (*Scottish Naturalist* 1936: 128-129)

1947 Fife Isle of May, 3 mm, 27th October (*Scottish Naturalist* 1948: 183)

1969 Dumfries & Galloway Mull of Galloway, Wigtownshire, adult m, 17th August (*Scottish Birds* 6: 339)

1976 Fife Isle of May, caught, 11th June, had been ringed at Beachy Head, Sussex 27th July 1975 (*Scottish Birds* 9: 294, 296)

1994 Orkney Whitehall Village, Stronsay, first winter f, 21st October (J Holloway) (*Scottish Bird Report* 1994: 65)

[Pre 1816 Lothian, 1837 Lothian, Pre 1863 Lothian, c.1840 Borders, 1863 Northeast Scotland, Pre 1886 Perthshire, 1908 Ayrshire, 1916 Ayrshire, Pre 1935 Upper Forth/Perth & Kinross]

Black-faced Bunting, Fair Isle 2001 Paul french

Cretzschmar's Bunting
Emberiza caesia (3, 3)

1967 **Fair Isle** m, 10th to 20th June, trapped 14th (G J Barnes, R H Dennis, W N Landells *et al*) (*British Birds* 61: 359, 62: 144-148)

1979 **Fair Isle** m, 9th to 10th June (N R Jones, W E Oddie, I S Robertson *et al*) (*British Birds* 73: 528)

1998 **Orkney** Stronsay, m, 14th to 18th May (W Barkley, J F Holloway, S J Williams *et al*) (*British Birds* 94: 499; *Birding World* 11: 192-193)

Yellow-browed Bunting
Emberiza chrysophrys (3, 5)

1980 **Fair Isle** m, age uncertain, 12th to 23rd October (P J Ewins, A R Kitson, I S Robertson *et al*) (*British Birds* 75: 530, 76: 217-225)

1992 **Orkney** North Ronaldsay, 22nd to 23rd September (P J Donnelly *et al*) (*British Birds* 86: 411-414)

Yellow-browed Bunting, Orkney 1998
Catherine Grivas

1998 **Orkney** Hoy, 4th to 5th May (K Fairclough, M Gray *et al*) (*British Birds* 92: 604; *Birding Scotland* 1: 112-113)

Pallas's Bunting
Emberiza pallasi (2, 3)

1976 **Fair Isle** adult f, 29th September to 11th October, trapped 10th (R A Broad, S G D Cook, A R Lowe *et al*) (*British Birds* 72: 543, 73: 402-408)

1981 **Fair Isle** first year, trapped, 17th to 18th September (A Broome, N J Riddiford *et al*) (*British Birds* 75: 531)

Rose-breasted Grosbeak
Pheucticus ludovicianus (1, 25)

1983 **Outer Hebrides** Newton, South Uist, first winter m, 7th October, taken into care and died next day (I Macaskill, C H Pickup, Mrs B Wake) (*British Birds* 77: 560)

Bobolink
Dolichonyx oryzivorus (5, 23)

1975 **Shetland** Out Skerries, 18th September (C A Harbard, I Sandison, T A Walsh *et al*) (*British Birds* 70: 222)

1986 **Outer Hebrides** St Kilda, 28th September (D Miller) (*British Birds* 81: 593)

1986 **Fair Isle** 29th September to 2nd October (P V Harvey, N J Riddiford *et al*) (*British Birds* 80: 568; *Scottish Birds* 14: 256)

1998 **Shetland** Durigarth, 28th September to 5th October (K Osborn, G Peplow *et al*) (*British Birds* 92: 606; *Shetland Bird Report* 1998: 95)

2000 **Shetland** Out Skerries, first winter, 21st to 22nd September (P Forrest, M J McKee, C Turner, T Warwick) (*British Birds* 94: 500; *Shetland Bird Report* 2000: 98)

Brown-headed Cowbird
Molathrus ater (1, 1)

1988 **Argyll** Ardnave, Islay, m, 24th April (C R McKay) (*British Birds* 86: 536, 87: 284-288)

Baltimore Oriole
Icterus galbula (2, 20)

1974 Fair Isle immature, 19th to 20th September (R A Broad, A R & B R Dean *et al*) (*British Birds* 68: 330, *Scottish Birds* 10: 58-59)

1988 Outer Hebrides Benbecula, f or first winter m, trapped, 30th September to 3rd October, probably present since about 22-24th (P R Boyer, T J Dix, Mr & Mrs C Heath *et al*) (*British Birds* 82: 559)

[1890 Shetland]

CATEGORY D

Greater Flamingo
Phoenicopterus roseus (2)

1988 Shetland Pool of Virkie, 27th to 31st May (P V Harvey, Mrs L Marshall *et al*) (*British Birds* 88: 555)

1994 Northeast Scotland Ythan estuary, adult, 31st May to 28th June (S M D Alexander, P Shepherd *et al*) (*British Birds* 88: 555)

These 2 records are the only ones, so far, to be admitted to this Category by the BOU.

Baikal Teal
Anas formosa (2)

1958 Moray & Nairn Loch Spynie, Moray, f, shot, 5th February (Major Brander-Dunbar per Dr J S Ash and the late Dr J M Harrison) (*British Birds* 74: 460), specimen at Harrison Zoological Museum, Kent

1973 Dumfries & Galloway Caerlaverock, m, 19th February to 7th April (D J Britton, P G Lansdown, B Little) (*British Birds* 73: 530)

[1954 Fair Isle]

Falcated Duck
Anas falcata (2)

1998 Clyde Merryton Haugh, m, 8th to 15th March and 1st November to 24th May 1999 (A I English *et al*) (*British Birds* 92: 607)

2000 Orkney Shapinsay, m, found shot, 24th November (I Dillon *et al*) (*British Birds* 94: 501), specimen at National Museums of Scotland (NMSZ 2002.86)

Hooded Merganser
Lophodytes cucullatus (1)

2000 Outer Hebrides Oban Trumisgarry and Voiskinish, North Uist, age/sex uncertain, 23rd October to 1st November (G Evans, B Rabbits, A Stevenson *et al*) (*British Birds* 95: 524; *Birding Scotland* 4: 17-18)

Booted Eagle
Hieraaetus pennatus (1)

2000 Orkney North Ronaldsay, 22nd June (P J Donnelly) (*British Birds* 95: 525)

Saker Falcon
Falco cherrug (3)

1976 Shetland Out Skerries, 1st to 5th October (D L Clugston) (*British Birds* 73: 530)

1978 Shetland Fetlar, 27th to 29th May (J F Cooper, J N Dymond) (*British Birds* 72: 544)

1986 Fair Isle first winter, 23rd October to 3rd December (D R Bird, M G Pennington, N J Riddiford *et al*) (*British Birds* 83: 492)

Asian Brown Flycatcher
Muscicapa dauurica (1)

1992 Fair Isle first summer, trapped, 1st to 2nd July (P V Harvey *et al*) (*Ibis* 136: 254; *Birding World* 5: 252-255; *British Birds* 87: 247-252)

Daurian Starling
Sturnus sturninus (2)

1985 Fair Isle m, 7th to 28th May, trapped 21st (P V Harvey, N J Riddiford, K B Shepherd *et al*) (*British Birds* 82: 603-612; *Ibis* 136: 497)

1998 Highland Durness, Sutherland, age uncertain, 24th to 27th September (A Vittery *et al*) (*British Birds* 94: 501)

Chestnut Bunting
Emberiza rutila (4)

1974 Shetland Foula, adult m, 9th to 13th July (B L & R W Furness, M J Wareing *et al*) (*British Birds* 70: 444)

1985 Fife Isle of May, first year f, trapped, 11th June (K Brockie, Dr M P Harris *et al*) (*British Birds* 80: 568)

1986 Fair Isle first summer m, trapped, 15th to 16th June (K Osborn, N J Riddiford, A Whittaker *et al*) (*British Birds* 80: 568)

1994 Shetland Out Skerries, f, 2nd to 5th September, trapped 3rd (J F & Mrs D R Cooper, J D Okill *et al*) (*British Birds* 88: 556; *Shetland Bird Report* 1994: 96-97)

Blue Grosbeak
Guriaca caerulea (3)

1970 Shetland Out Skerries, m, mid to 26th August (R J Tulloch) (*Scottish Birds* 6: 397)

1972 Highland Kiltartility, Inverness, imm m, 10th to 11th March (M I Harvey) (*British Birds* 66: 360)

1977 Borders Inner Huntly, Ettrick, Selkirkshire, m, dead, 22nd May (A J Smith) (*Scottish Birds* 10: 153)

Indigo Bunting
Passerina purpleea (1)

1964 Fair Isle m, 3rd to 7th August (R H Dennis *et al*) (*British Birds* 73: 531)

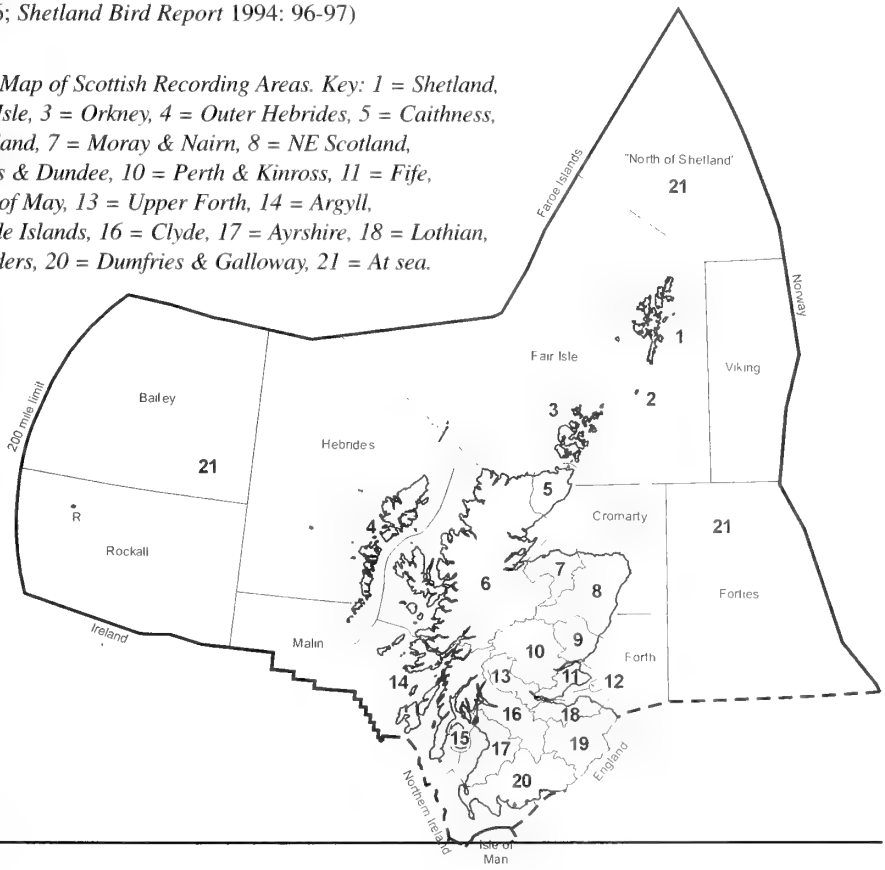


Figure 1. Map of Scottish Recording Areas. Key: 1 = Shetland, 2 = Fair Isle, 3 = Orkney, 4 = Outer Hebrides, 5 = Caithness, 6 = Highland, 7 = Moray & Nairn, 8 = NE Scotland, 9 = Angus & Dundee, 10 = Perth & Kinross, 11 = Fife, 12 = Isle of May, 13 = Upper Forth, 14 = Argyll, 15 = Clyde Islands, 16 = Clyde, 17 = Ayrshire, 18 = Lothian, 19 = Borders, 20 = Dumfries & Galloway, 21 = At sea.

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Evening Grosbeak, St Kilda, 26th March 1969 *Nick Picozzi*

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Birds of St Kilda

by Stuart Murray

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Birds of St Kilda

STUART MURRAY

This annotated list updates information on the birds of St Kilda, Western Isles since the last review in 1978 (Harris & Murray 1978). It includes records made by myself between 1996-98. Observations made since 1978 are summarised and many unpublished records are included. For a full description of the physical and biological characteristics of the islands the reader is referred to the accounts in Williamson & Boyd (1960) and in Jewell, Milner & Boyd (1974). Details of the human history of the islands and of the fowling practices of the St Kildans are presented by Harman (1997). The term St Kilda covers 4 islands: the inhabited Hirta (638ha, highest point 430m), the adjacent Dun (32ha, 175m) and Soay (99ha, 378m) and some 6km away Boreray (77ha, 384m) and the small satellites Stac Lee (172m) and Stac an Armin (196m) (Figures 1 and 2). All are cliff bound and difficult of access. Most of Hirta is covered by a complex of* Agrostis-Festuca *grasslands with 2 large areas of* Calluna-Eriophorum *bog. There is a small area of long abandoned agricultural land in the Village area and truly maritime vegetation around the coasts and often high up the cliffs, modified by spray and the large numbers of seabirds. The whole island, except for inaccessible ledges, is heavily grazed by sheep. Neighbouring Dun, ungrazed since before 1930, has 2 main vegetation types - rank* Festuca *grassland and bird influenced* Rumex *sward. Soay has 3 major plant communities - a dry* Eriophorum *bog, a wet* Holcus *grassland on the south east and an area of mixed grassland. In contrast, the vegetation of Boreray is a uniform grassy sward. Both Soay and Boreray are heavily grazed. On all the islands, most birds are found on the coasts. The land avifauna is very impoverished.

The development of ornithology on St Kilda

Starting with Martin (1698), most early visitors (Table 1) to the islands made casual observations on the birds, but with a few exceptions they were more concerned with the human inhabitants, their bird catching activities and the various stoneworks. The most thorough account of the birds in the 19th century was compiled by Mackenzie (1905) from memoranda written in 1840 and 1841 by his father, the Reverend Neill Mackenzie, who was minister on Hirta for 14 years from 1829. Although this gives a good account of the birds and their habits, the few population estimates, calculated on the number of eggs taken or birds killed, must be treated with reserve. For instance, it is just not possible to fit 50,000 Common Guillemots[1] onto Stac Biorach. Sands (1878) gave a few records based on his 10 months in the islands, but the main point of ornithological interest is his calculation of 89,600 Atlantic Puffins being killed in 1876. Dixon (1885) and Elliott (1895) added several species to the island list and Wiglesworth (1903) treated the resident birds in some detail

[1] Scientific names are given in the systematic list

The systematic recording of migrants, which still continues, was started by Clarke and Stout in September and October 1910 and 1911. They recorded 96 species, including 48 for the first time on St Kilda (Clarke 1912).

Table 1 *Early visits to St Kilda which produced significant ornithological observations.*

Year	Visitor(s)	Time spent	Source
1697	M Martin	12 June for 3 weeks	Martin (1697)
1758-59	Rev K Macaulay	19 June 1758-July 1759	Macaulay (1764)
1829-43	Rev N Mackenzie	Resident minister	Mackenzie (1905)
1831	G C Atkinson	31 May-2 June	Atkinson (1831)
1840	J Macgillivray	July	Macgillivray (1840)
1841	J Wilson	2-3 August	Wilson (1842)
1847	W Milner	14-15 June	Milner (1848)
1853	O H Mackenzie	1-4 June	Mackenzie (1921)
1868	H J Elwes	23 May	Elwes (1869)
1875	J Sands	3 June-19 July	Sands (1878)
1876-77	J Sands	22 June-22 February	Sands (1878)
1883	R M Barrington	Three weeks in June	Barrington (1884)
1884	C Dixon	4-18 June	Dixon (1885)
1886	H Saunders	August	in Williamson (1958a)
1886-87	G Murray	10 June for a year	in Williamson (1958a)
1894	J S Elliott	Three weeks in June	Elliott (1895)
1898	N Heathcote	Summer	Heathcote (1905)
1902	J Wiglesworth	Three weeks in June	Wiglesworth (1903)
1905	J Waterson	11 June-10 July	Waterson (1905)
1910	O Pike	7 July	Clarke (1912a)
	Duchess of Bedford	23-25 August	Clarke (1912a)
	W E Clarke, G Stout	1 September-8 October	Clarke (1911,1912a)
1911	W E Clarke, G Stout	2 September-12 October	Clarke (1912a,1912b)
1914	Duchess of Bedford	23-25 May	Bedford (1914)
1927	S Gordon	12-19 June	Mathieson *et al* (1928)
1930	A Macrae	27 July	Macrae (1930)
1930	**St Kilda evacuated, permanent settlement ends 29 August**		
1931	J Buchan, T H Harrison	22 July-14 August	Buchan *et al* (1932), Harrison & Lack (1934) Harrison & Buchan (1934, 1936)
1938	R Atkinson	23 July-9 August	Atkinson (1947,1949)
1939	J Fisher, J S Huxley, E M Nicholson	31 May-2 June	Nicholson & Fisher (1940)
1947	J Fisher	10-13 and 16-19 June	Fisher (1948)
1948	J Fisher, I J Ferguson-Lees	10-21 July	in Williamson (1958a), Ferguson-Lees (1948)
1949	J Fisher	19 May	Fisher and Vevers (1951)
1951	E A Armstrong, P Westall	One day in June	Armstrong (1953)
1952	J M Boyd, T B Bagenal	24 July-10 August	Boyd (1954), Bagenal (1953)
1954	B B Rae	27 August	Rae (1954)
1955	J M Boyd, D J Munns, A A K Whitehouse	24--30 May	Boyd *et al* (1956)
1956	J M Boyd, A Twenion, D I M Wallace	11 June-22 July	Boyd *et al* (1957)
	A Anderson	12-23 July	Anderson (1957)
1957	**St Kilda reinhabited, declared a National Nature Reserve**		

Figure 1 *The islands and stacs of the St Kilda group.*

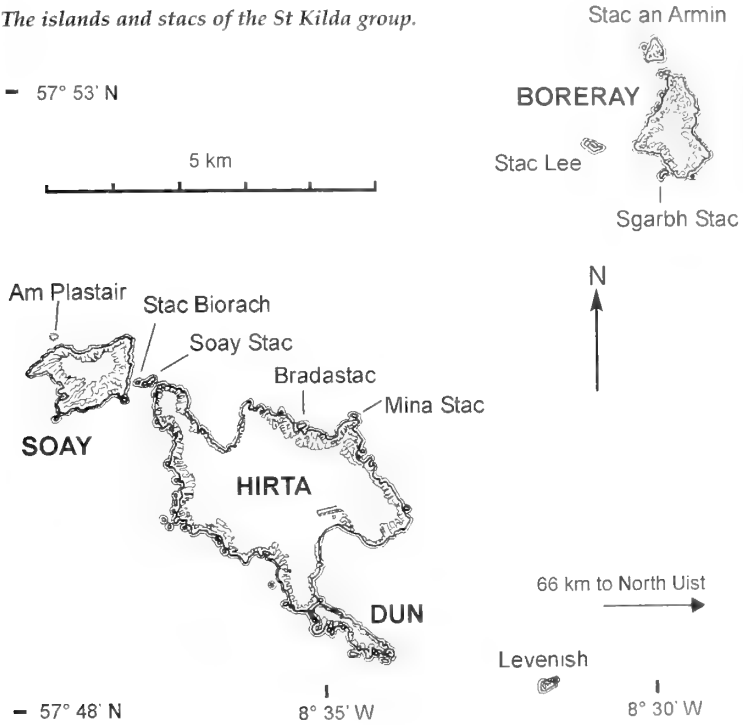
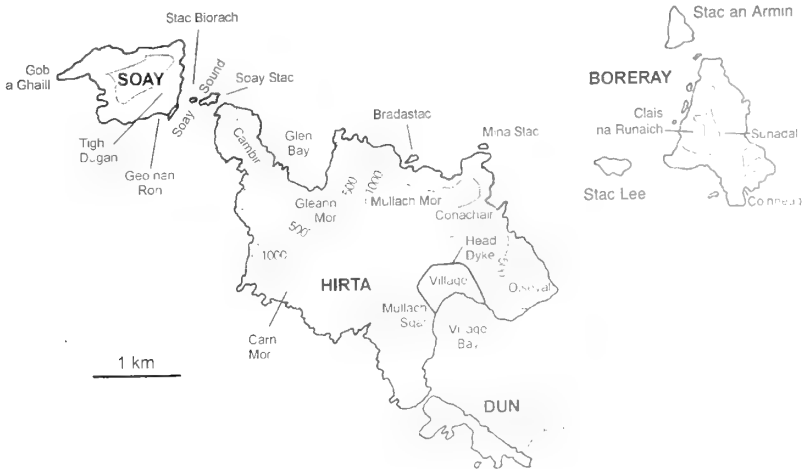


Figure 2 *St Kilda, showing the place names used in the text and the 500 ft and 1000 ft contours.*



Dun and Village Bay with (lower left) the army base set within the Village head dyke (S Murray).

Glen Bay and the Cambir with Soay beyond (S Murray).

Harrison & Lack (1934) made the first systematic counts of resident land birds and counted the Northern Gannets in July and August 1931, the year after the human population evacuated the island, and these counts of land birds and/or Gannets and Northern Fulmars were repeated in 1939, 1947 and 1949 (Nicholson & Fisher 1940, Fisher 1947, Fisher & Lockley 1954). Several visits by Nature Conservancy (now Scottish National Heritage) staff and others between 1952 and 1956 also produced some population data (Boyd *et al* 1956, 1957).

With the establishment of a National Nature Reserve at St Kilda by the Nature Conservancy in agreement with the National Trust for Scotland (NTS), the owners and also with the building in the same year of a permanent Army base, Williamson & Boyd (1960) spent the summer of 1957 on Hirta and produced the most comprehensive account of the birds to date. Communications to the islands improved dramatically, a resident summer warden was appointed (Table 2) and research workers and NTS parties became annual visitors. This resulted in much greater coverage of migrant birds and improved population data for breeding land birds and most seabirds. The status of the birds, migrant and resident up to August 1978 was reviewed by Harris & Murray (1978).

The ruined bothy on Stac an Armin where the last British Great Auk was killed in 1840 (S Murray)

Table 2 *Months when ornithological records were made on St Kilda 1957-2000 and the names of wardens, followed by relief wardens.*

	J	F	M	A	M	J	J	A	S	O	N	D	
1957				*	*	*	*	*	*	*	*	*	**K Williamson**, J M Boyd, T B Bagenal
58				*	*	*	*	*	*	*	*	*	**J M Boyd**, W J Eggeling and 8 others
59	*	*	*	*	*	*	*	*	*	*			**J M Boyd**, R R Harding and 4 others
1960					*		*						**J M Boyd**, W R P Bourne and 7 others
61					*	*	*	*	*	*	*	*	**M Smith**
62	*	*	*	*	*	*	*	*	*				**M Smith**, A Twenion
63						*	*	*					**M Smith**, K Williamson, J B Cragg, D J Martin
64					*		*	*	*	*	*	*	**A Dickens** and 4 others
65	*	*	*	*	*	*	*	*	*	*	*		**D C Gywnne, P Grubb**, I Cheyne
66	*		*	*	*	*		*		*	*		?
67													?
68			*	*	*	*	*						NC staff on 2 week stays
69			*		*	*	*						**D Stewart**
1970						*	*						**D Stewart**
71			*	*	*	*	*	*	*				**D Stewart**
72				*	*	*	*	*	*				**D Stewart**
73				*	*	*	*	*	*				**R Brant**
74				*	*	*	*	*	*	*			**S Murray**
75		*			*	*	*	*	*	*	*	*	**G Wood, G Baxter**
76	*	*	*	*	*	*	*	*	*			*	**H Brown**
77				*	*	*	*	*			*	*	**W Wright**
78	*	*	*	*	*	*	*	*					**W Wright**
79				*	*	*	*	*					**W Wright**
1980				*	*	*	*	*					**W Wright**
81	*	*		*	*	*	*	*		*			**W Wright**
82			*	*	*	*	*	*					**W Wright**
83			*	*	*	*	*	*					**W Wright**
84				*	*	*	*	*	*	*	*		**P R Moore**, A Scott
85			*	*	*	*	*	*	*				**P R Moore**, D Masson
86			*	*	*	*	*	*	*	*			**D Miller**, R B Duncan
87		*	*	*	*	*	*	*	*			*	**D Miller**, R B Duncan
88	*		*	*	*	*	*	*	*	*			**J Evans**, J Babbs, D Buckland
89				*	*	*	*	*	*	*			**J Ramsay**, R Evans
1990	*	*		*	*	*	*	*	*				**S G Holloway**, R Evans
91		*	*	*	*	*	*	*	*	*	*	*	**J Vaughan**, W D Oldham, R Evans
92	*	*	*	*	*	*	*	*	*	*	*	*	**J Vaughan**, J Collis
93			*	*	*	*	*	*	*	*	*	*	**J Vaughan**, G Churchill
94		*	*	*	*	*	*	*	*	*	*	*	**J Vaughan**, E MacLean
95		*	*	*	*	*	*	*	*	*	*	*	**P Tyler**, J Vaughan, D MacLennan, G Churchill
96	*	*	*	*	*	*	*	*	*	*	*	*	**S Murray**, G Churchill
97		*	*	*	*	*	*	*	*	*	*	*	**S Murray**, J Ferguson
98		*	*	*	*	*	*	*	*	*	*	*	**S Murray**, A Shepherd
99		*	*	*	*	*	*	*	*	*	*	*	**A Robinson**, J Ramsay
2000			*	*	*	*	*	*	*	*	*	*	**A Robinson**, D MacKay
	11	**17**	**25**	**36**	**41**	**41**	**42**	**39**	**30**	**24**	**19**	**18**	**Total of months**

Since 1979 there has been an increased focus on the breeding seabirds. Furness & Baillie (1981) investigated European Storm-petrel populations, Furness & Todd (1984) reported on the diet and feeding in Northern Fulmars, Leaper *et al* (1988) surveyed seabird distribution around the islands. Northern Gannets were counted in 1985 and 1994 (Murray & Wanless 1986, 1997) with a census of all species undertaken in 1987 (Tasker *et al* 1988). Newton *et al* (1990) investigated organochlorine and mercury levels in Gannet eggs. Mitchell *et al* (2002) counted all the breeding seabirds (except Gannets) in 1999/2000. They used the recently developed technique of tape play back and were able to make the first assessment of the numbers of burrow occupying European Storm-petrel, Leach's Storm-petrel and Manx Shearwater, although Furness (1984) made some estimates of Leach's Storm-petrel based on ring/recapture technique. Phillips *et al* (1997, 1999) studied the Great Skuas and highlighted their impact on the populations of small petrels.

In 1990 the Joint Nature Conservation Committee (JNCC) started a triennial monitoring programme on Hirta to identify population changes in Northern Fulmars, Black-legged Kittiwakes, Common Guillemots and Razorbills (Thompson & Walsh 1997). Scottish Natural Heritage (SNH) also undertake annual monitoring of breeding success of Fulmars and Kittiwakes as part of the JNCC national monitoring effort. Long term monitoring of Atlantic Puffins on Dun ended in 1987 (Harris & Rothery 1988), but fledged Puffin chicks attracted to the Village Bay lights are collected annually in July/August by the warden. Their weights and total numbers give an index of colony productivity and breeding success (Harris *et al* 1998). Land birds have received less attention. A census of Winter Wrens on Hirta was made by S G Holloway in 1990 (unpublished) and all passerines in 1993 by Vaughan & Love (1994).

Ornithological expeditions to Soay (1989 & 2000) and Boreray (1979,1980,1987 & 2000) have been the most extended visits to these islands since before 1930 (Tables 3 & 4). All yielded new information on the resident species, but few migrants. The bulk of these continue to be found in the Village and Gleann Mor.

Northern Gannets on the summit ridge of Stac Lee, May 1996 (S Murray).

The coverage since 1979 is most complete from April to August, similar to 1957-78, but there are only 2 sets of winter records, 1991-92 and 1995-96 (LARG, SERCO) compared to 5 in the earlier period (details in Table 2).

Table 3 *Landings of more than one day on Soay and Boreray 1930-2000. Details from Harris & Murray (1978), Murray (1981), Duncan* **et al** *(1982), Tasker* **et al** *(1988), P R Moore and D Rothe (unpublished) and Mitchell* **et al** *(2002).*

Year	Dates	Visitor(s)	Remarks
Soay			
1967	Summer	M Robson	By helicopter for 2 days
1971	17-18 July	M L Brooke plus 5	Estimated breeding Atlantic Puffins, ringed small petrels
1989	7-16 June	P R Moore, M Harman, D Rothe	Surveyed Puffin colonies
2000	4-11 July	S Murray, A Webb, R Mavor, S Money, A Reid	Puffin colony census and survey of Leach's and European Storm-petrels
Boreray			
1960	16-19 May	J M Boyd plus 2	Attempted seabird counts
1965	8-10 July	D C Gwynne plus 2	Recorded birds present
1971	11-13 July	M L Brooke plus 4	Surveyed Puffin colonies, ringed small petrels
1976	18-19 August	S Murray, K G Taylor	Ringed small petrels
1979	24 May-1 June	S Murray, J M Boyd, M Harman plus 4	Counted Northern Gannets
1980	8-25 July	N Duncan, K G Taylor, S Wanless plus 4	Studied seabirds, sheep, invertebrates and vegetation
1987	13-20 June	P R Moore, P M Walsh	Surveyed Puffin colonies
2000	26 June-3 July	S Murray, A Webb, R Mavor, S Money, A Reid	Puffin colony census and survey of Leach's and European Storm-petrels

Table 4 *Summary of all known landings (in days) made to the outer islands and stacs of St Kilda, 1930-2000. Details from Harris & Murray (1978), NCC/SNH files (unpublished), Mitchell* **et al** *(2002).*

	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-2000
Boreray	2	1	4	11	30	44	34
Soay	2	-	2	4	10	19	15
Stac an Armin	-	-	2	1	4	8	3
Stac Lee	-	-	-	1	3	4	7
Levenish	-	-	1	-	4	2	2
Other Stacs	-	-	-	-	4	1	2
Total of days	**4**	**1**	**9**	**17**	**55**	**78**	**63**

Material

1. The author's personal records collected from May to August 1979, and from late March to early November 1996-98 when acting as SNH/NTS warden. The author also made shorter visits in June 1985, May 1995 and June/July 2000.
2. A survey of the published data including the last review of the birds of these islands: Harris & Murray (1978).
3. Records in the files of Scottish Natural Heritage in South Uist, covering the years 1957 to 1983, and monthly bird reports from 1984, when wardens' reports were standardised, up to December 2000.
4. Unpublished data from the JNCC Seabird 2000 survey of the breeding seabirds.
5. From A Robinson, species seen in 2001 that were new to St Kilda.
6. Unpublished records solicited directly from people the author knew had worked on, or visited, the islands.

Methods of counting breeding birds

Replicate counts of Northern Gannet nests were made on Boreray from 24 May-1 June 1979 (Murray 1981). Aerial photographic surveys were made on the 15 June 1985 and 15 May 1994, supported by land and sea visits to Boreray and the stacs (Murray & Wanless 1986, 1996).

Tasker *et al* surveyed breeding seabirds between 12-24 June 1987 (but not Gannets, the small petrels or the Manx Shearwater). Landings were made on Dun, Boreray and Stac an Armin, but not Soay. Most species were counted, but Atlantic Puffins on Soay and Hirta were estimated.

Phillips *et al* (1997, 1999) counted Great Skua nests on Hirta in 1996 and on Soay and Boreray in 1997. Great Black-backed, Lesser Black-backed and Herring Gull nests and territories were mapped in May-June 1996 on Hirta and Dun (Warden's reports).

Mitchell *et al* (2002) counted or estimated all the breeding species (except Gannets) and made the first detailed counts of European Storm-petrel, Leach's Storm-petrel and Manx Shearwater using tape playback (May-June 1999 and June-early July 2000). Landings were made on Dun, Soay and Boreray, but not on the stacs.

The units counted were: apparently occupied nests/sites (AOSs) for Northern Gannet, Northern Fulmar, European Storm-petrel, Leach's Storm-petrel and Manx Shearwater: apparently occupied burrows (AOBs) for Atlantic Puffin: apparently occupied nests (AONs) for Black-legged Kittiwake and European Shag: apparently occupied territories/nests, pairs (AOTs) for skua and gull species: individuals for Razorbill, Black Guillemot, Common Guillemot and Atlantic Puffins in boulder fields or unreachable areas.

Winter Wrens were surveyed on Hirta in 1990 by S G Holloway (unpublished) and in 1993 by J Vaughan (Vaughan & Love 1994). Territories were based on 3 records of singing males, nest finding or food carrying adults. Meadow Pipits, Rock Pipits and Northern Wheatears were surveyed in 1993 using the same criteria.

Eurasian Oystercatchers have been surveyed on Hirta in 7 years between 1980 and 2000 and nests/AOTs plotted on 1:10,000 maps (Wardens' reports).

Systematic list

To save space, sources of records are not given for a species which has been recorded 4 or more times, or if it was seen by the author between 1996 and 1998. Sources of numerical or distributional data are also given when this is not apparent from the context. For published data, just the name of the authors are given, for unpublished records the initials are added. Sources can be traced by reference to Tables 1, 2 and 3 and the bibliography, but the main population data come from the following sources.

Year	Dates	Reference
1931	22 July-14 August	Harrison & Lack (1934)
1939	31 May-2 June	Nicholson & Fisher (1940)
		Fisher & Vevers (1943)
1947	10-13 and 16-19 June	Fisher (1948)
1949	19 May	Fisher & Vevers (1951)
1955	24-30 May	Boyd *et al* (1956)
1956	11 June-22 July	Boyd *et al* (1957)
	13-18 July	Anderson (1957)
1957	All summer	Williamson (1958a)
		Williamson & Boyd (1960)
1959-60	May	Boyd (1960a, 1961)
1961	12-23 July	Anderson (1962)
1961-62	All summer	Waters (1962b)
1963	22 June-9 July	Williamson (1964)
1968	13-25 July	Dott *et al* (1969)
1969	May-July	Birnie & Yule (1969)
		J J M Flegg *et al* (unpublished)
		Boyd (1969)
1971	11-19 July	Brooke (1972)
1974-78	April-August	Harris & Murray (1978)
1976-79	April-August	K G Taylor (1982)
1979	May-June	Murray (1981)
1978 & 80	July-August	Furness & Baillie (1981)
1980	July	Duncan *et al* (1982)
1981 & 83	July-August	Furness (1984)
1985	June	Murray & Wanless (1986)
1987	May-July	Tasker *et al* (1988)
1977-87	May	Harris & Rothery (1988)
1989	June	P R Moore & D Rothe (unpublished)
1993	April-September	Vaughan & Love (1994)
1994	May	Murray & Wanless (1996)
1987-96	May-August	Thompson & Walsh (1997)
1996	May-August	Phillips *et al* (1997)
1973-96	July-August	Harris *et al* (1998)
1996-98	April-November	Warden's reports (unpublished)
1997	April-July	Phillips *et al* (1999)
1999-2000	May-July	Mitchell *et al* (2002)

All pre 1978 records have been documented by Harris & Murray (1978) and all later records have been traced back to their original sources. The original warden' reports have been consulted, so the dates may not accord with published material but are assumed to be the true date. All records of migrants refer to Hirta unless otherwise stated. Scientific names and systematic order follow Voous (1973, 1977). The English names of species and subspecies follow the Scottish List (Clugston *et al* 2001).

Species in the main list have been accepted by the British Birds Rarities Committee. For the sake of completeness, species descriptions submitted to, but rejected by the committee are listed separately.

Red-throated Diver *Gavia stellata*
Fifteen records between 1964 and 2000, all single birds, except 2 adults on 6 June 1985 and 1 July 1987. Recorded April (3), May (3), June (3), July (1), August (2), September (2) and October (1).

Black-throated Diver *Gavia arctica*
Singles 28 November 1975 (D Neal), 19 October 1993 (T J Dix, K J Douglas) and 18 October 1996 (K J Douglas).

Great Northern Diver *Gavia immer*
Twenty two records up to 1978, one in 1981, annually since 1984. Recorded in all months with most between April and June. Usually single birds, but 2 summered in 1961, and 3 were present on 20 November 1999. Two or more birds present from January to March in 1995 and 1997.

Little Grebe *Tachybaptus ruficollis*
Single in Gleann Mor 1 September 1994 (J Vaughan).

Great Crested Grebe *Podiceps cristatus*
Singles 30 June 1969 (R N Campbell) and 30 June 1996 (K J Douglas).

Slavonian Grebe *Podiceps auritus*
Seventeen records between 1911 and 1999, all of single birds, except for 2 on 19 October 1993 and 1 November 1999. Recorded May (1), June (1), September (5), October (8) and November (2).

Black-necked Grebe *Podiceps nigricollis*
Single juvenile 16-23 August 1991 (J Vaughan) and single adult 16 October 1993 (D Clark, T J Dix, K J Douglas).

Northern Fulmar *Fulmarus glacialis*
Breeds. Resident, but usually few birds present November to January. St Kilda is the oldest known colony in the eastern Atlantic and the largest in Britain and Ireland.

The population has increased greatly since the first census of 25,500 pairs in 1931 (Harrison in Fisher 1952). In 1956 Anderson (1957) estimated a group total of 37,000 AOSs, with 19,415 (52%) on Hirta. Subsequent counts have adhered to Anderson's subdivisions of the Hirta cliffs, enabling more detailed comparisons of changes to be made (Table 5). Since then, total

group counts have been 43,977 AOSs in 1977 (Harris & Murray 1978), 62,786 in 1987 (Tasker *et al* 1988) and 66,942 in 1999 (Mitchell *et al* 2002).

The dramatic increase in the population between 1977 and 1987 of 18,809 AOSs (43% or 3.62% per annum) slowed to a rise of only 4156 (0.5% p.a.) between 1987 and 1999. There was also a substantial shift in the distribution within the islands. Numbers on Boreray declined by 4,165 AOSs (-61.2%) since 1987, while numbers on Soay increased by 3,458 (+60%) and on Hirta by 6,213 (+17.5%). On Dun numbers remained very similar. Stac an Armin appears to be the most stable of the large subcolonies and numbers have remained at around 2,000 AOSs since 1977. Details of the 1999 counts are compared with previous counts in Tables 5 and 6.

Inland nesting in upper Gleann Mor has occurred since the early 1950s, but although numbers have increased slightly, breeding remains confined to the higher cliffs. The first nest in Village Glen was found in 1979, in the excavated quarry above the Village; breeding now takes place on rock outcrops from Mullach Sgar to Oiseval and inside many of the Village structures. Twenty three young were found here in July 1998.

Following a long period of uninterrupted growth, Northern Fulmar numbers at St Kilda may now be generally stable.

Figure 3 *Lines demarcating areas of coast on Hirta where Northern Fulmars have been counted, 1956-99 (see Table 5). After Mitchell* **et al** *(2002) modified after Anderson (1957).*

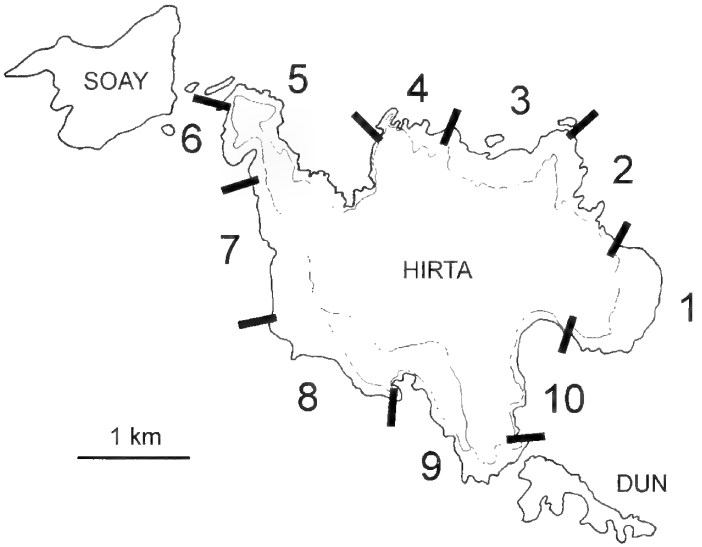


Table 5 *Counts of apparently occupied nest sites of Northern Fulmars on Hirta 1956-1999. Areas are those of Mitchell* **et al** *(2002) modified after Anderson (1957).*

Area	13-18 July 1956	1-16 July 1977	12-24 June 1987	2-23 June 1999
1	2265	2609	1284	4814
2	2390	5025	8242	11144
3 [1]	9105	7996	11199	12276
4	752	538	1450	707
5	1805	2384	[5331] [2]	3836
6	775	1123	[ ]	760
7	1150	3624	4611	5281
8	615	995	1907	1188
9	543	385	452	802
10	15	130	670	605
Gleann Mor	?	few	160	57
Village Glen	?	0	43	92
Hirta total	19415	24809	35349	41562
% of group	52	56	56	62
Group total	37000	43977	62786	66942

Sources: Anderson (1957), Harris & Murray (1978), Tasker *et al* (1988) and Mitchell *et al* (2002).
Note: [1] Area 3 includes Mina Stac and Bradastac in all years. [2] Boundaries for these 2 sections in 1987 do not correspond with those in other years, so totals 620 and 4711 are summed.

Table 6 *Counts of apparently occupied nest sites of Northern Fulmars on St Kilda 1956-1999.*

Year	1956	1977	1980	1987	1999
Hirta	19415	24809	-	35349	41562
Dun	1680	6940	-	12018	11206
Soay	-	6300	-	5679	9137
Soay sound stacs	-	366	-	432	222
Levenish	-	12	-	80	63
Stac Lee	-	50	-	39	8
Stac an Armin	-	2000	-	2387	2107
Boreray	-	3500	3100 [2]	6802	2637
St Kilda total	c37000 [1]	43977	?	62786	66942

Sources: Anderson (1959), Harris & Murray (1978), Duncan *et al* (1982), Tasker *et al* (1988) and Mitchell *et al* (2002).
Notes: [1]1956: complete count of Hirta, Bradastac and Mina Stac. Partial count of Dun. Soay, Boreray and the stacs estimated. [2]1980: Direct count, island estimate c3500 AOSs.

Great Shearwater *Puffinus gravis*
Dead birds found on 5 and 8 July 1905 (Waterston). Described as not uncommon in the late 19th and early 20th centuries, and even as abundant between Hirta and Boreray in October 1910 and 1911. There have been no sightings close to the islands since then, except for 2 birds seen 12km south west of Dun on 20 August 1983 (I Rees). Extreme dates are 19 June and 12 October.

Sooty Shearwater *Puffinus griseus*
Twenty one records between 1910 and 2000, all between 7 June and 18 October. Most involved single birds with the largest flock of 15 on 20 September 1984. Rarely seen from

land, but one or 2 dark shearwaters seen in Village Bay lights on 11-12 September 1999 were probably this species.

Manx Shearwater *Puffinus puffinus*
Breeds; adults present on land from March to September. The distribution of breeding birds appears to be little changed since the 1970s (Harris & Murray 1978), but nothing is known of population trends due to lack of counts in the past. The 1999/2000 survey (Mitchell *et al* 2002) found 4,581 apparently occupied sites (3,371-5,687, 95% confidence limits) on Hirta, concentrated in the Carn Mor boulder field and adjacent slopes (4,486 AOSs), the west side of Gleann Mor (61 AOSs) and the upper slopes of Oiseval (34 AOSs). On Soay breeding appears to be confined to the Tigh Dugan boulder field and was estimated at less than 500 AOSs in July 2000. On Dun burrow densities in sampled areas were found to be very low and less than 450 AOSs were estimated for the entire island. Relatively few birds have been recorded on Boreray, none have been found in burrows and there is no evidence of breeding anywhere on the island.

No concentrations have been seen at sea and a survey in June 1987 found few in the immediate vicinity of the islands (Leaper *et al* 1988).

European Storm-petrel *Hydrobates pelagicus*
Breeds; adults present early May to early November. The past distribution of the species within the group is imperfectly known and the size of the colony has only been guessed at as being "extremely large" (Harris & Murray 1978) and "probably the largest in Britain" (Tasker *et al* 1988).

The 1999/2000 survey (Mitchell *et al* 2002) found a group total of 1,121 apparently occupied sites (825-2,242, 95% confidence limits), with 508 on Hirta, 84 on Boreray and 529 on Soay. None were found on Dun which contrasts with 1987, when they were found along rocky sections of the ridge (Tasker *et al* 1988). Nothing is known about the population trend, but numbers may have been higher in the early 1980s. Furness & Baillie (1984) estimated that 24% of all birds caught on Hirta in 1978 (357 out of 1452) and 1980 (218 out of 909) were breeding. Although not an attempt at a census, their results suggest that breeding numbers could have been higher at that time.

Leach's Storm-petrel *Oceanodroma leucorhoa*
Breeds; adults present late April until early November. St Kilda has the largest colony of the species in the north east Atlantic and holds 92% of the British and Irish population. Past attempts at mapping their distribution found them widespread on Hirta with the densest concentration at Carn Mor, but the colony on Dun was considered to be much larger than any on Hirta (Harris & Murray 1978). This was confirmed by Furness (1984) in a ringing / recapture study on the north west side of Dun, which implied a breeding population of 8300 pairs. He estimated the whole of Dun to hold 16-17,000 breeding pairs and to have the highest concentration of the species in the group. On Boreray, Tasker *et al* (1988) estimated 3,200-6,400 occupied burrows on the south slopes. Breeding also known from Soay and Levenish and suspected on Stac an Armin.

The 1999/2000 survey (Mitchell *et al* 2002) found a group total of 45,435 apparently occupied sites (34,314-61,398, 95% confidence limits) with 27,704 on Dun, 12,092 on Boreray, 3,605 on Hirta and 2,034 on Soay.

Northern Gannet *Morus bassanus*

St Kilda has the largest colony of the species, with 19% of the world population. Breeds on Boreray, Stac Lee and Stac an Armin. Adults present from late January to November. The first estimate was 14-15,000 breeding pairs in 1902, with little variation in counts made up to 1949, when 17,035 pairs were counted (Fisher & Vevers 1943). In 1959 Boyd carried out the first successful aerial survey, counting 44,526 pairs. It now appears that counts up to 1949 greatly underestimated the size of the colony and the marked increase between 1949 and 1959 was a counting artefact (Wanless 1987). Boyd's count has formed the baseline for all later surveys, including the estimates made from partial counts in 1969 and 1973 (Dixon 1973) and 1979 (Murray 1981). The most recent surveys, comparable with the coverage and methodology of Boyd were made in June 1985 and May 1994 (Table 7). The counts of Stac Lee and Stac an Armin in 1985 and 1994 were directly comparable in terms of aerial coverage and photographic quality, but the count of Boreray in 1985 was based on a lower percentage of aerial coverage (34%) compared with 1994 (98%). The 1985 count was probably too low as a result. Comparing the 1994 Boreray count with 1959 gives an average rate of increase of 0.8% per annum, a very similar trend to that shown by Stac Lee (0.9% pa) and Stac an Armin (0.8% pa) over the same period.

Table 7 ***Counts of the St Kilda gannetry in 1959, 1985 and 1994.***

Year	Boreray	Stac Lee	Stac an Armin	Totals	Source
1959	24133	10775	9618	44526 pairs	Boyd (1961)
1985	24673	13521	11853	50050 occupied sites	Murray & Wanless (1986)
1994	32818	14660	12950	60428 occupied sites	Murray & Wanless (1997)

Great Cormorant *Phalacrocorax carbo*

Probably bred in the 19th century as Mackenzie (1905) noted 2 species of cormorants breeding 1829-43. Macgillivray (1840) and Milner (1848) recorded the species, the latter claiming to have obtained eggs. Clarke (1911) saw a number in September and October 1910 and 1911. Since then the only records, all of single birds, have been January (1), February (1), April (4), May (4), June (2), July (4), August (5), September (3), October (2) and November (1). Only 2 summer plumage adults have been recorded, both in April.

European Shag *Phalacrocorax aristotelis*

Breeds. Present throughout the year, but most birds leave after the breeding season and return in February (180 on Dun, January 1981). The largest colony is under boulders at the east end of Dun. This was estimated at several hundred pairs in 1956 and 600 in 1969. Systematic searches for nests were made in May 1975 (134 found) and May 1977 (144 found). There have been no complete counts of the area since, but c90 pairs were estimated in 1984 and at least 20 in 1987, but this was known to be an underestimate (Tasker *et al* 1988). A partial search in April

1996 found 62 nests. Estimates on Hirta have been based on birds seen ashore on possible breeding habitat, mainly boulder beaches that are largely inaccessible from the land. Estimates have been c100 pairs in 1931, 200+ pairs in 1956 and 10 in 1969. In 1968 only 82 birds were counted and the population was probably less than 100 pairs in 1974-77. On Soay nests have been found only at Geo nan Ron/Mol Shoay (4 in 1987). There is little suitable habitat on Boreray and the only nests found have been in Coinneag (2 in 1987, 1996 and 2000). The whole island estimate of 50-60 pairs in 1980 (Duncan *et al* 1982) is probably too high.

Overall numbers appear to have changed little since the 200-300 pairs estimated in the mid 1970s.

Little Egret *Egretta garzetta*
Single adult 7-10 May 1992, was found dead on the 12 May (J Vaughan).

Grey Heron *Ardea cinerea*
A regular visitor, reported in most years and annually since 1987. Recorded in all months, but most records in July (19), August (24), September (23) and October (13) probably refer to dispersing juveniles. Mostly single birds, rarely 2 together, but 4 in August 1999, 5 in September 1974 and September 1996. Many birds remain and die on the island.

Purple Heron *Ardea purpurea*
Single adult seen 17-20 March 1992, was later found dead (J Pilkington, T J Dix).

Mute Swan *Cygnus olor*
Six to 8 in Glen Bay 22 April-1 May 1972. Singles in Village Bay in April 1980 and 1981, 1-11 July 1987 and 23-24 June 1995.

Whooper Swan *Cygnus cygnus*
Annual migrant, recorded in all months, but most frequently in April (42), May (26), October (17) and November (17). Occasional birds in June and July may be late migrants, or as in 1971, 1996 and 1997 injured and later found dead. Three birds over wintered 1999-2000. Numbers commonly up to 5 rarely more than 10, but exceptional records were 55 on 1 April 1989, 40 on 9 April 1997 and 43 on 5 October 1991.

Bean Goose *Anser fabalis*
One bird 14-24 September 1957 was later joined by 2 others, all remained until late in the winter (Williamson 1958a). One 16-17 June 1974 (Harris & Murray1978).

Pink-footed Goose *Anser brachyrhynchus*
Probably a commoner spring visitor than the 36 records between 13 April and 26 May suggest. The maximum count was 150-200 on 22 April 1972. There are 19 autumn records between 13 September and 24 October with a maximum count of 380 on 29 September 1999. Few records in other months, March (1), June (2), November (3) and December (1).

Greater White-fronted Goose *Anser albifrons*
Uncommon passage migrant reported on 24 occasions between 1895 and 2000. Usually in small numbers (less than 10) and mostly in spring. Maximum counts are 300 on 29 April 1973, 167 on 22 April 1997 and 35 on 5 November 1997. Recorded April (10), May (4), June (3), September (1), October (2) and November (4).

Single of the Greenland race *A a flavirostris* 12-13 November 1958.

Greylag Goose *Anser anser*
Recorded annually since 1979, usually less than 10 birds, with maximum counts of 237 on 8 October 1973 and 500 on Boreray on 22 April 1997. Most common in spring with 55 records between 9 April and 29 May. Late migrants, injured or flightless birds have been present in June-July in 1962, 1971, 1979, 1984, 1987 and 1999. Rare in autumn and winter with most records in October (15). One or 2 over wintered in 1964-65, 1977-78, 1981-82 and 1991-92.

Other records of overflying geese in April and May presumably refer to this and/or Pink-footed Goose.

Canada Goose *Branta canadensis*
Two 25 May-10 June 1975 and one 12 July 1975 (Harris & Murray 1978), 2 on 26-28 June 1992 (J Vaughan).

Barnacle Goose *Branta leucopsis*
Few early records, but annually since 1977. Mostly in spring with 39 records between 17 April and 22 May. Majority of flocks less than 10, rarely more than 100. Maximum counts are 3,000 passing between Boreray and Hirta on 30 April 1996, another 1,000 were probably this species, but too distant to confirm. Also 500 on 18 April 1997. In autumn only in very small numbers, with 12 records between 11 September and 5 November. Rarely on land, but one over wintered 1977-78.

Brent Goose *Branta bernicla*
Recorded in 18 years since 1898, annually from 1993. Mostly singles, rarely 2 or 3 together, with maximum counts of 15 on 18 April 1997 and 21 on 10-12 October 1996. Recorded April (7), May (7), June (4), July (1), August (3), September (7), October (3) and November (1). All were the pale-bellied race *B b hrota*, except for a single bird of the dark-bellied race *B b bernicla* on 30-31 August 1999.

Common Shelduck *Tadorna tadorna*
One over wintered 1977-78, singles 11-20 July 1959, 29 July 1964, 24 September 1991 and 13 April 1997.

Eurasian Wigeon *Anas penelope*
An uncommon visitor, usually in spring, maximum 6 on 22 April 1968. Recorded April (14), May (15), June (5), July (1), August (5), September (10) and November (1).

Aerial view of the east face of Stac an Armin in May 1994 (S Murray).

Gadwall *Anas strepera*
One 20 May-2 June 1992 (J Vaughan).

Eurasian Teal *Anas crecca*
A pair hatched young in 1974, but none fledged (Harris & Murray 1978). Small numbers occur in most years (annually since 1980). Most records are of singles or pairs, rarely more than 5, but 35, April 1985, 26, May 1986 and 30, October 1986. Recorded April (22), May (21), June (3), July (1), August (7), September (17), October (9) and November (4).

Green-winged Teal *Anas carolinensis*
Single males recorded on 26 April 1980 (R Gibson, W Wright, D J R Counsell), 2 May 1986 (D Miller) and 4 December 1987 (J J Gordon).

Blue-winged Teal *Anas discors*
Singles 16-17 September 1991 (J Vaughan), 20 October 1995 (I R Hartley) and 14 October 2000 (A Robinson).

Mallard *Anas platyrhynchos*
An uncommon visitor, usually singly, rarely more than 2 together. Recorded March (1), April (13), May (5), June (4), July (3), August (5), September (6), October (9) and November (4).

Northern Pintail *Anas acuta*
Recorded in 8 years since 1910. Records are of single birds or pairs, except for 1998 when 2 females and 4 juveniles were present between 17 August and 2 November. A single female was on Boreray 8-10 July 1980.

[**Garganey** *Anas querquedula*]
Recorded in error by Harris & Murray (1978) (R G Gibbs pers comm).

Northern Shoveler *Anas clypeata*
Single males on 23-26 May 1976 (Harris & Murray 1978), 27 August 1990 (S G Holloway) and 15-20 May 1993 (J Vaughan).

Common Pochard *Aythya ferina*
Five records, 5 May 1972 (2 birds), 22 June 1973 (1), 8-13 May 1976 (1), 7 June 1976 (2) and 27 August 1990 (1).

Ring-necked Duck *Aythya collaris*
A male on 19 September 2000 (A Robinson).

Tufted Duck *Aythya fuligula*
First recorded in 1958, annually since 1985. The majority are single males. Most common, (45 records) between 13 April and 27 June. Recorded also July (4), August (3), September (4), October (4) and November (1).

Greater Scaup *Aythya marila*
First recorded in 1957 and seen in 14 years up to 2000. Nearly all single birds, but 3 in April 1987 and 2 in May 1962. Recorded April (2), May (6), July (2), September (3) and October (2).

Common Eider *Somateria mollissima*
Breeds. Maximum numbers of nests found on each island have been 11 on Dun (1947), 10 on Hirta (1956) and 3 on Boreray (1987 and 2000). Not yet proved to nest on Soay. Counts of adult birds suggest the breeding population has remained at about 50 pairs from 1958 to 1999. Maximum counts of adults in Village Bay in May have been, 36 males and 39 females (1958), 42 males and 29 females (1996), 42 males and 35 females (1998) and 65 males and 53 females (1999). The few birds present between October and February may be winter visitors rather than residents.

King Eider *Somateria spectabilis*
Single female in Village Bay 12-15 June 1992 (J Vaughan).

Long-tailed Duck *Clangula hyemalis*
First recorded 1911 and uncommon to 1980, but most years since in autumn, with 45 records between 13 September and 24 November. Majority are singles, but maximum 6 on 17 October 1992. Recorded also January (2), February (4), March (2), April (6), May (3), June (2), July (1) and December (5).

Black Scoter *Melanitta nigra*
Uncommon visitor first recorded 1957, usually single birds. Eighteen records between 13 April and 22 June, also July (3), August (1), September (3), October (1) and November (2).

Surf Scoter *Melanitta perspicillata*
[Single male from 5-23 May 1961, joined by a female on 19 May only (M Smith). Record unsubstantiated.] Single juvenile on 22 October 1998.

Velvet Scoter *Melanitta fusca*
Six records. 27 July-1 August 1961 (1 bird), 16 April 1972 (2), 14-28 July 1975 (1), 25 May 1991 (2), 26 October 1999 (3) and 10-13 November 1999 (1).

Common Goldeneye *Bucephala clangula*
Recorded in 18 years from 1961 to 1999, nearly all single birds. Eighteen records between 1 April and 26 June and 8 records between 13 September and 11 November.

Red-breasted Merganser *Mergus serrator*
Said to have bred in the 19th century (Seebohm 1885). Pair may have summered in 1976. Frequent visitor between April and July and October-November, but no records between December and March. Most records refer to single birds, but up to 9 in May 1975. Passage noted in May 1992 with flocks of up to 4 birds present daily.

Goosander *Mergus merganser*
Seven records of single birds between 1972 and 1997. Recorded April (2), May (4) and September (1).

White-tailed Eagle *Haliaeetus albicilla*
Apparently bred in the 17th, 18th and possibly early 19th centuries. Seven recent records, all of immature birds. Single 3 March 1994, possibly the same bird 22 April 1994. Single 24 May 1997, 2 together on 6, 9 and 10 July 1997 and one on 21 June 1998.

Eurasian Marsh Harrier *Circus aeruginosus*
One 24 May 1975 (C J Hendricks) and single adult male 6 April 1993 (J Vaughan, A MacColl).

Hen Harrier *Circus cyaneus*
Singles on 6 May 1975, 5 June-27 July 1990, 20 April 1993 and 17-19 June 1996.

Eurasian Sparrowhawk *Accipiter nisus*
Singles 13-16 May 1979 (W Wright), 10 June 1988 (RAFOS) and 9-12 October 1993 (T J Dix).

Common Buzzard *Buteo buteo*
Singles 24 August 1958, 20 April-20 June 1976, 26-28 April 1984, 3 August 1991 and 23 October 1999.

Rough-legged Buzzard *Buteo lagopus*
Singles 13-16 May 1979 (W Wright) and 8 May 1990 (S G Holloway).

Golden Eagle *Aquila chrysaetos*
Single records between 22 April and 26 May in 5 years, 1955-1976.

Osprey *Pandion haliaetus*
Singles 29 March 1965 (Gwynne 1965) and 31 May 1997.

Common Kestrel *Falco tinnunculus*
Probably bred in 1952 as Bagenal & Boyd saw a male, a female and 2 others they thought were juveniles, 27 July-10 August. Also it was probably one of the 2 species of hawks nesting on the cliffs 1829-1843 (MacKenzie 1905). Since 1952 it has been a scarce visitor, with only 14 records between 12 April and 2 June and 24 between 23 July and 5 November. Seen on Boreray May 1960.

Merlin *Falco columbarius*
Recorded most springs (annually since 1972) and in all months. Of 145 dated records, 60% were between 1 April and 31 May and 20% between 1 September and 31 October. The occasional bird over winters, eg 1964-65 and 1995-96, but there are no records of summering birds later than 26 June or before 22 July.

Eurasian Hobby *Falco subbuteo*
Nine records of single birds (4 adults, 4 immatures and one either female or immature) in 7 years between 1980 and 1997. Recorded May (5), June (2), August (1) and September (1).

Gyr Falcon *Falco rusticolus*
Nine records of single birds, eight since 1964. Spring 1910, 1 December 1964-24 January 1965, 22-23 March 1983, 29 February-27 April 1992, 8-14 April 1994, 31 March 1995, 19 April 1997, 17-20 April 1998 and 9 April 2000.

Peregrine Falcon *Falco peregrinus*
There were usually 2-3 pairs nesting up to the early part of the last century, with eyries known on Dun, Hirta, Soay and Boreray. Two pairs were present on Hirta in 1931 and 1939 and birds seen in June-July 1947, 1948 and 1956, and in late May 1955 could have been breeding. Recorded on 7 dates March-July 1962, but breeding was not suspected. From then until 1983 sightings were few, mostly in spring and usually of single birds, but in 1984, 1985 and 1986 birds or pairs were present from April to August. Breeding was confirmed in 1987 and 1988, but not in 1989, although it may have been attempted (a female was found dead on Dun on 28 May). Since then breeding has been proved annually up to 1997. In 1998 a pair was seen regularly around the summit of Dun in April, but there was no evidence of breeding. In both 1999 and 2000 birds were back on the usual Hirta site, but despite several searches nothing was found to suggest that breeding had taken place (A Robinson). Single adults were then seen occasionally into late autumn and a juvenile was present in September and October in both years.

There is no proof of recent breeding on any other island, but single birds have been present on Boreray in May 1984 and 1999 and July 1980.

Red Grouse *Lagopus lagopus scoticus*
Singles 5 December 1959 (MacKay 1960) and 21 July 1970 (M Hornung).

Scottish Ptarmigan *Lagopus mutus millaisi*
One undated record before 1841 (Wilson 1842).

Grey Partridge *Perdix perdix*
One 6 May 1993 (D Clarke, K J Douglas).

Common Quail *Coturnix coturnix*
Records in 7 years between 1959 and 1997. Singles, except on 28 May 1997 when 2 present. One on Boreray 29 May 1979. Recorded May (8), June (1), July (1) and August (1).

Water Rail *Rallus aquaticus*
Records of single birds in 17 years between 1903 and 2000. Recorded September (2), October (4), November (6), December (5), January (4), February (2), March (2), April (6) and May (2). Birds overwintered, November to April, 1993-94 and 1994-95.

Spotted Crake *Porzana porzana*
Singles 27-29 October and 14 November 1995, 13 October 1998 and 28 October 2000.

Corn Crake *Crex crex*
Probably bred in the first half of the 19th century, but was not recorded between 1841 and 1881. The last confirmed breeding was 1915, when chicks were found (Clarke 1915b). The species was not recorded in 1931, but calling males were present in 1938, 1939, 1947, 1952, 1955, 1963 and 1965 (late June to 9 July). From 1968 to 2000 there were 9 records between 7 April and 8 June and 3 in autumn, 3 September 2000, 15 September 1994 and 20 October 1986. All are singles except for 2 on Dun in June 1982.

Common Moorhen *Gallinula chloropus*
Thirteen records of single birds between 1957 and 2000 in March (1), April (4), May (5), August (1), September (1) and November (1).

Common Coot *Fulica atra*
Singles recorded 12 November 1902, 24 September 1910, 21 October 1964, 5 February and 17-20 May 1965 and 8-18 May 2000.

Common Crane *Grus grus*
Single adult summered 8 May-17 September 1997 and one heard calling 13 May 2000 (A Robinson).

Eurasian Oystercatcher *Haematopus ostralegus*
Breeds; adults present from February to late August with migrants at other times. Present in the 17th century (Martin 1697). Not considered numerous in the early 19th century (MacKenzie 1905), but steadily increased in the 20th century with 48 pairs on Hirta by 1963. The next island census, in 1974, again found 48 pairs on Hirta and also 3 on Dun. Numbers have since declined to 18 pairs on Hirta and one on Dun in 2000. (Table 8) There are no breeding records from Soay, but one pair was present in July 2000. On Boreray one pair probably bred in 1980 (Duncan *et al* 1982) and 4 pairs actively defended territories in 1998 and 2000.

Table 8 ***Numbers of breeding pairs of Eurasian Oystercatchers on Hirta and Dun 1963-2000.***

Year	Estimates	Source
1963	48 pairs on Hirta	Williamson (1964)
1974	48 pairs on Hirta, 3 on Dun	Harris & Murray (1978)
1980	44 nests on Hirta	M P Harris
1984	31 nests on Hirta	P R Moore
1991	25-30 pairs on Hirta	J Vaughan
1993	39 pairs on Hirta, 4 on Dun	Vaughan & Love (1994)
1994	35 pairs on Hirta, 1 on Dun	J Vaughan
1998	25 pairs on Hirta, 1 on Dun	S Murray
2000	18 pairs on Hirta, 1 on Dun	A Robinson

Little Plover *Charadrius dubius*
One 2 August 1977 (D Budworth, A Blackburn).

Ringed Plover *Charadrius hiaticula*
Regular migrant in small numbers, commoner mid July to late September (maximum count 50) than in spring (most records from early May to mid June). Recorded also in March (2), April (8), October (5) and November (2). Seventeen on Boreray 15 July 1980.

Eurasian Dotterel *Charadrius morinellus*
Fifteen records between 1974 and 1996, all single birds except 2 on 12 May 1992 and 11 September 1986. Recorded April (1), May (4), June (1), August (3) and September (6). All the autumn records are of juveniles.

American Golden Plover *Pluvialis dominica*
Single juveniles 22-24 September 1990 and 29 August 1994. Single adults 7 September 1994, 3 September 1999, (two, 4-13 September 1999) and 18 October 1999. Single juvenile 4 October 2000.

European Golden Plover *Pluvialis apricaria*
Bred in 1947. Two pairs in territory, one young found, also one pair with young in 1948 (Fisher *et al* 1949). One pair with single young 13 August 1986 (R Waters). Nest with 2 eggs 15 June 1988 (J J Gordon) and a pair with a single young August and September 1989 (J Ramsay). Breeding suspected in 1977 and 1984 when adults seen feigning injury, and may also have attempted to breed in 1949, 1955, 1965, 1978 and 1998. Common migrant April and May, numbers rarely above 30, but 120 on 29 April 1975 and 177 on 22 April 1992. Odd birds seen in June and July in many years. Autumn passage is from late August until late October, with a very few records in early November, usually involving small numbers. Maximum counted, 40 on 15 September 1995. Singles on 6 December 1958, and 25 February 1987. Occasionally seen on Boreray, highest count 25 on 22 May 1979. Only a single record from Soay, 2 on 2 June 1997.

Grey Plover *Pluvialis squatarola*
One 28 September 1910, 2 on 8 September 1974, one 15-21 September 1985, one 14 September 1994 and one 18 April 1997.

Northern Lapwing *Vanellus vanellus*
Small numbers have occurred in all months. Up to 1978 the species was most regular in March and April (maximum count 16). Since 1979 there have been 119 records, most in April (37) and May (18), 100 involved single birds and the maximum count was 23 on 25 February 1987.

Red Knot *Calidris canutus*
Annual migrant mid July to late September, rare at other times. Recorded May (7), June (4), November (2) and December (1). Numbers rarely exceed 10, maximum count 20 on 23 December 1975.

Sanderling *Calidris alba*
Annual migrant mid July to mid October, with a single record, 20-28 November 1993. Most common in August and September. Irregular in spring, with 37 records, 6 May-27 June. Numbers rarely exceed 5; maximum count 11 on 12 September 1993.

Little Stint *Calidris minuta*
Nine records between 1957 and 1999 in June (1), August (2) and September (6). Singles on 6 dates, but 2 on 3 June 1988, 5 on 4 September 1988 and 2 on 3-6 September 1999 with one remaining until 11 September.

Temminck's Stint *Calidris temminckii*
Singles on 24 June 1970, 21 and 26 July 1974, 29 May 1981, 6-7 June 1999, and 29 August-1 September 2000.

White-rumped Sandpiper *Calidris fuscicollis*
Singles on 9 October 1986, 11-12 and 20 October 1999, 9-11 September and 5-9 October 2000.

Baird's Sandpiper *Calidris bairdii*
One on 28 September 1911 was shot (Clarke 1911). Singles 16 September 1986, 16–20 August 1994. Single juvenile 28-30 August 1999 then 2 on 3-4 September with one remaining to 7 September 1999.

Pectoral Sandpiper *Calidris melanotos*
Singles 1-2 October 1986 (D Miller), 16-18 and 22 September 1992 (J Vaughan). Single juvenile 3-7 September 1999, joined by another 6-7 September (A Robinson).

Curlew Sandpiper *Calidris ferruginea*
Singles 2-5 September 1988, 20 June 1990, 13-14 September 1991, 15 July 1993 and 30 August and 3-6 September 1999.

Purple Sandpiper *Calidris maritima*
Annual migrant recorded in all months in small numbers. Maximum counts, 21 on Hirta 26 April 1959 and 20 on Boreray 12 May 1997. Has summered 1976, 1977, 1997 and 1998 and may do so regularly. Recorded from all the islands and larger sea stacks.

Dunlin *Calidris alpina*
Breeding suspected on several occasions 1840-1902, but no definite proof (Macgillivray 1840, Wiglesworth 1903). Migrant in small numbers, spring passage (maximum count 56) from late April (though single 3 March 1965) to early June, and return from mid July to October. Autumn numbers are usually small, but 40 on 12 July 1975. Uncommon in winter. Recorded on Dun, Soay and Boreray.

Buff-breasted Sandpiper *Tryngites subruficollis*
Singles 15 June 1962, 15-17 September 1984, 8-12 September 1994 and 22 September 2000.

Ruff *Philomachus pugnax*
An uncommon visitor since the first in September 1910. Recorded May (1), June (1), July (4), August (15) and September (11). Most are single birds, but 4 on 31 August 1985. Recorded on Boreray 17 May 1960 (1 bird) and 8 August 1978 (2).

Jack Snipe *Lymnocryptes minimus*
Rare visitor up to 1984, but easily overlooked. Recorded annually 1990 to 2000. Appears not to overwinter, although one present 25-26 February 1996. Six spring records 22 March-6 June and 51 autumn records, 16 September-30 November. Majority are single birds, but up to 4 on 4 dates in autumn. An influx in October 1993 gave a maximum of 11 on the 3rd.

Common Snipe *Gallinago gallinago*
Breeds; most birds are summer visitors with few remaining by the end of September. It is an abundant autumn migrant in some years. The small numbers occurring in winter are presumed to be immigrants. Up to the evacuation in 1930 the species was apparently scarce, and was absent from the Village enclosure. In 1931 there were only 3 pairs on Hirta and one on Soay, but by 1938 they were common and tame. In 1939 there were at least 30 pairs on Hirta and 24 birds in the Village, but in 1947 there were only 2 pairs in the Village and 6 elsewhere. It was again numerous in 1948, 1952, 1955, 1957 (60-70 pairs on Hirta and 30+ pairs in the Village area) and 1963 (35 pairs concentrated in the Village Glen). It was common and conspicuous in 1972, 1973 and 1974, but there were far fewer (? half the numbers) drumming in 1975 and 1976. Since then trends in the breeding population have been largely unknown, and the difficulties of accurate censusing render many estimates of little value. A 1993 survey found 21 nests/drumming pairs in Village Glen, with an estimated 100 pairs for all of Hirta (Vaughan & Love 1994). Although nests have been found all over the island the main concentrations remain in lower Gleann Mor, Village Bay and on Dun. Also breeds on Soay (more than 10 pairs June 1999), but is uncommon on Boreray.

Great Snipe *Gallinago media*
One 6 September 1910 (Clarke 1911).

Long-billed Dowitcher *Limnodromus scolopaceus*
Single juvenile 17-18 September 1984 (M J Helps, A R Kitson, P R Moore).

Eurasian Woodcock *Scolopax rusticola*
A scarce autumn visitor from mid October with some birds over wintering (1958-59, 1964-65, 1987-88, 1994-95 and 1997-98). Numbers are usually small (maximum 10 since 1958), but N Ferguson reported large influxes in the early 20th century. Most records in November (more than 30). Scarce in spring with only 5 records 22 March–31 May. One in July 1948.

Black-tailed Godwit *Limosa limosa*
Records in February (1), April (6), May (10), June (2), July (3), August (3) and September (1). Most are single birds, largest flock 7 on 12 July 1975.

Bar-tailed Godwit *Limosa lapponica*
Single birds recorded between 1974 and 2000 in April (1), May (3), August (5) and September (1).

Whimbrel *Numenius phaeopus*
First recorded breeding in 1964 (M MacMillan) and probably annually up to 1980. Young hatched in at least 4 years, but soon disappeared and there is no record of successful fledging. Normally one pair, but 3 pairs in 1972. A second pair summered in 1976, but there was no evidence of it breeding. Three birds present in 1977, possibly a male and 2 females as 6 eggs were laid in a single scrape. However, there were 7 eggs laid in 1978 when only 2 birds were seen, and 8 eggs in 1979 (Harris, Murray & Wright 1981). In 1999 and 2000 birds were seen displaying in May and were present throughout June, but there was no evidence of breeding. May also have bred in 1884, 1905, 1956, 1961 and 1963. Otherwise there is a well marked spring passage from mid April (earliest record 21 March) to June. Maximum daily count 25 (in 1999), but usual numbers are small. Scarce in autumn with latest records 27 September. Seen on Boreray in May 1979 and 1990.

Eurasian Curlew *Numenius arquata*
Dixon (1885) thought that 2 pairs nested in 1884 and it may have bred in the early 20th century (Harrison and Lack 1934). Song flights and display were recorded 1969-71 (J J M Flegg). Apparently more frequent formally and has been recorded in all months. Earliest date since 1979, 21 March and latest 7 November, with records in March (8), April (17), May (13), June (12), July (18), August (33), September (26), October (1) and November (1). Usual numbers small, maximum count 21, 26-27 August 1998. Recorded on Boreray July 1977 and 1980.

Upland Sandpiper *Bartramia longicauda*
One 24 April 1980 (W Wright, R Gibson, D J R Counsell).

Spotted Redshank *Tringa erythropus*
Two 21 September 1992 (T J Dix).

Common Redshank *Tringa totanus*
A pair behaved as though nesting in May 1974, but one adult was killed by a Merlin. Regular migrant in April and May and from mid July to late September. Recorded also in June (14) and October (5). Numbers are normally small, but 100 on Hirta and 20 on Levenish on 12 July 1975. Otherwise the maximum count has been 43 on 27 April 1986. Single on Soay 12 August 1986.

Common Greenshank *Tringa nebularia*
Thirteen records between 1957 and 1999 in April (1), June (2), July (2), August (6) and September (2). All single birds except 2 on 25-27 August 1998, and 5 on 2 September 1988.

Green Sandpiper *Tringa ochropus*
Ten records of single birds between 1959 and 1993 in May (3), June (2), July (1) and August (4).

Wood Sandpiper *Tringa glareola*
Eight records of single birds between 1958 and 2000 in May (4), June (3) and September (1).

Common Sandpiper *Actitis hypoleucos*
Recorded in late April (4), May (26), June (12), July (7), August (6) and September (6). Nearly all single birds except 2 on 7 May 1986 and 18 July 1989. Maximum counts 3 on 11 May 1984 and 19 July 1988. One on Boreray 26 May 1999.

Spotted Sandpiper *Actitis macularia*
One 22-23 May 1982 (A Bennet, J J Gordon).

Ruddy Turnstone *Arenaria interpres*
Small numbers are present throughout the year. Although the total of birds scattered along the coastal rocks is probably high, the annual maximum counts have rarely exceeded 50 (Village Bay only) with a maximum of 72 in September 1995. There was an unprecedented 1000-2000 in the Village area, end of October/early November 1975 (D Neal). Recorded from all the islands and large stacs.

Red-necked Phalarope *Phalaropus lobatus*
A pair bred in Gleann Mor in 1972 and fledged 3 young (D Stewart). Prior to this a female in breeding plumage was seen 13-16 July 1968, a pair was present in July 1970 and a pair displayed for 3 weeks, June/July 1971.There are no further records of breeding behaviour, but single females were present in Village Bay and Gleann Mor between 23 May and 6 July 1986, and in Gleann Mor 2-26 June 1987 and 7-19 June 1990. Other records are, single male 31 May-7 June 1988, single female 16 August 1991 and one on the sea near Boreray 28 June 1994.

Grey Phalarope *Phalaropus fulicarius*
Single juvenile 29 August 1991 (A MacColl). Two unidentified phalaropes 12-14 October 1961 were probably this species (Waters 1962c).

Pomarine Skua *Stercorarius pomarinus*
Nine records between 1968 and 1997 in May (3), June (4), July (2) and 12-13 October 1911. All are offshore sightings except one on Mullach Mor, Hirta, 4 June 1997.

Arctic Skua *Stercorarius parasiticus*
Two pairs defended territory on Hirta in 1999, but did not breed. One pair present from 22 June until 2 September, second pair present all of July until mid August. Five birds on 12 August. One pair returned to the same area in May 2000 and a nest with 2 eggs was found on 13 June, with 2 young fledging by 28 July (A Robinson). Otherwise, 38 records between 11 May–17 August and 4 records 2-12 October. Numbers small, maximum 15, 10 August 1990.

Long-tailed Skua *Stercorarius longicaudus*
Two over the Cambir, Hirta, 1 May 1992 (J Vaughan).

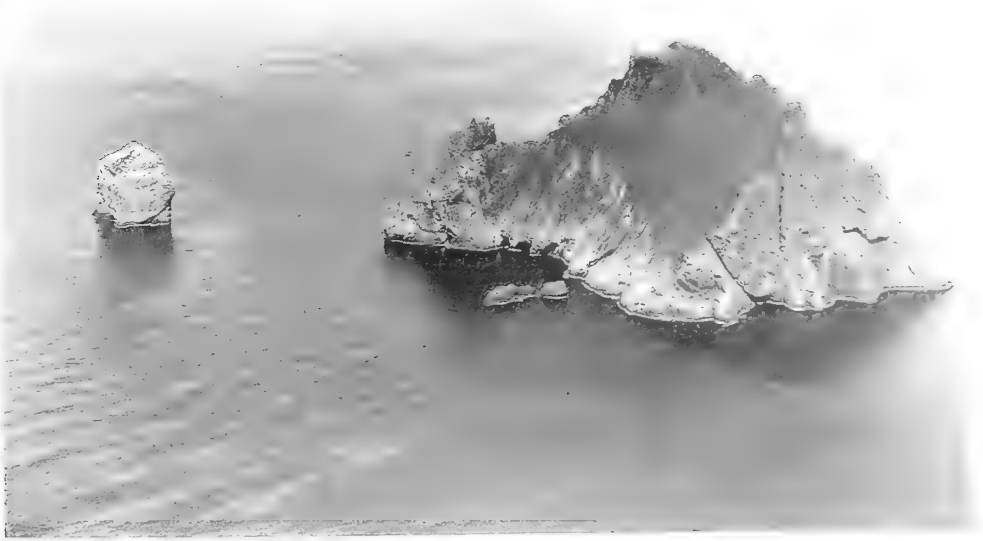
Great Skua *Catharacta skua*

An irregular visitor in the 19th century (Dixon 1885). A pair was seen in July 1956, but breeding was not confirmed until 1963 when a pair bred on Hirta (Pollock 1963). Since then the colony has grown steadily (Table 9) at an average annual rate of 16.8% up to 1990, increasing to 19.7% thereafter, up to 1997, when numbers peaked at 253 apparently occupied territories (Phillips *et al* 1997, 1999).The most recent counts, in 1999 (141 AOTs) and 2000 (183-200 AOTs) suggest this rapid growth has slowed, alternatively it could be a function of different counting methods. In 1996 and 1997 the majority of nests were found in both seasons, in 1999 and 2000 the counts were of AOTs scanned from a distance, which can underestimate population size.

On Soay a pair was found breeding in 1971. Since then most counts have been made from the Cambir on Hirta and have probably greatly underestimated the numbers present, eg 1989. Counted from Hirta 8 AOTs; counted on Soay 17 AOTs (Table 9). The highest count has been 36 AOTs (including 19 nests), made on Soay in 1997. The most recent estimate, c22 AOTs in 1999, was also made on the island. Uncertainty as to the accuracy of counts means little can be concluded about recent changes in numbers on Soay.

On Boreray breeding was first confirmed in 1979, when 2 pairs were present and one chick was found. There has been little change since then, with only 2-3 AOTs found in most years, but 3-4 in 1989, 6 in 1999 and 4 in 2000. (Table 9). A pair reared a chick on Dun in 1996.

Breeding adults return in early April and most depart by mid September, extreme dates are 27 March and 21 October.



Aerial view of Stac Lee and Boreray from the south east, 30 July 1947 (R Atkinson).

Table 9 *Counts of Great Skua pairs/apparently occupied territories on St Kilda 1963-2000.*

Year	Hirta	Soay	Boreray	Dun	Total	Source
1963	1	-	-	-	1	Pollock (1963)
1971	8	1 (s)	-	-	9	Harris & Murray (1978)
1978	25	4	-	-	29	Harris & Murray (1978)
1979	24	4	2	-	30	S Murray in Wardens' report
1980	34	2	1	-	37	W Wright. Duncan *et al* (1982)
1982	-	-	-	-	35	*Scottish Bird Report* (1982)
1984	25-30	11	1	-	37-42	P R Moore. Rennie (1988)
1984	-	-	-	-	45	N J Aitken in Rennie (1988)
1986	31	10	1	-	42	D Miller
1987	44	8	2	-	54	Tasker *et al* (1988)
1989	45	8	3-4	-	56-57	J Ramsay
1989	-	17 (s)	-	-	?	P R Moore & D Rothe (unpublished)
1990	66	5	1	-	72	S G Holloway
1991	55	-	2	-	?	J Vaughan
1992	53	3-4	2	-	58-59	J Vaughan
1993	107-112	10 (s)	2	-	119-124	Vaughan & Love (1994)
1994	128	15	2	-	145	J Vaughan
1996	213	12	3	1	229	Phillips *et al* (1997)
1997	233	36 (s)	2	-	271	Phillips *et al* (1999)
1997	-	-	3	-	?	S. Murray
1999	141	22 (s)	6	-	169	Mitchell *et al* (2002)
2000	183-200	-	4	-	?	R Phillips, S Murray in Wardens' report

Note: Table 9 (s) means Soay visited, reference given in Source.

Mediterranean Gull *Larus melanocephalus*
Single 1st winter 6 October 2001 (A Robinson).

Laughing Gull *Larus atricilla*
Singles [28 June 1971 (C Cox, E K Dunn, J J M Flegg). Record unsubstantiated.] and 23 June-14 July 1980 (I MacGowan, W Wright, W A G Cunningham).

Little Gull *Larus minutus*
Singles 15 May 1962 (Waters, 1963a) and 10-11 May 1996 (K G Douglas).

Sabine's Gull *Larus sabini*
Singles 10 October 1991 (J Vaughan, F D Thorington) and 2 March 1997 (K J Douglas).

Black-headed Gull *Larus ridibundus*
Annual visitor, most common April to August. Less frequent in winter, but has been recorded in all months. Usually in small numbers, but 126 on 8 April 1968 and 110 on 11 April 1994.

Ring-billed Gull *Larus delawarensis*
Single second winter 28-30 September 1994 (J Vaughan, T J Dix) and single adults, 15 June (A Robinson) and 19-20 August 2001 (A Robinson, A Stevenson).

Mew Gull *Larus canus*
A pair bred on Hirta in 1963 (Williamson 1964) and possibly also in 1840 (Macgillivray1840) and on Boreray in 1847 (Milner 1848). A nest with eggs in Village Glen in 1979 was trampled by sheep and since then the species has bred or attempted to breed annually. Breeding success has been poor with young known to have fledged only in 1980, 1986, 1991 and 1996. A nest with eggs found inside the Village head dyke in 1999 failed to hatch and breeding attempts in the Village area and Gleann Mor in 2000 all failed. Breeding has been attempted at various sites around Hirta, but most often in lower Gleann Mor, with the number of breeding pairs no more than one or 2 in most years, but 5 in 1992, 1993 and 1994. Small numbers (though more than 100 in 2 Aprils) recorded in the spring and summer months, but commonest in July and August. There are also records in January (2), March (3), September (7), October (4) and November (1).

Lesser Black-backed Gull *Larus fuscus*
Breeds. The earliest birds return in March, most not until mid April, and the majority leave by early September. Extreme dates are early February and 14 September. The early status is obscure although the species bred in the 19th century.

On Hirta at least one pair nested in Gleann Mor in 1931 (Harrison & Lack 1934), 15 pairs in 1947, but none in 1952. Nesting occurred regularly thereafter, reaching a maximum of 200 pairs in 1963 (Williamson 1964), then 170 (1973), 150 (1974) and 172 (1976). There has since been a substantial decline, to 81 pairs in 1987 and 46-55 pairs in 1996. Complete island counts, including Gleann Mor, found 263 pairs in 1969 and 240 pairs in 1976. Numbers declined to 86 pairs (60 nests found with eggs or young) in 1993. In 1996 the number of occupied territories increased to 135, but only 58 nests were found, declining to 13 in May 1999.

On Dun there appeared to be a slow increase in the 1970s to a maximum of 30 pairs in 1977. In 1987 numbers had fallen to 13 pairs, with 10 by 1996 and 7 nests in 2000.

The first recorded nesting on Soay was c30 pairs in 1971 (Brathay 1972) and some 60 pairs were visible from the Cambir in 1973. A visit in May 1993 found 15 pairs (J Vaughan) and a complete island count in July 2000 found only 3 pairs, all in the Tigh Dugan boulder field.

The first thorough search on Boreray found 4 breeding pairs in 1980, with a few failed or non breeders also present (Duncan *et al* 1982). There were 12 pairs in 1987 and 7 in June 2000.

Overall there has been a decline in the species at St Kilda, from c325 pairs in 1974-80 to c30 pairs in 2000.

Herring Gull *Larus argentatus*
Breeds. Resident, with a winter population of usually less than 100 individuals. In 1931 and 1939 there were about 50 pairs on Hirta, 30 pairs were found in 1969 and a thorough search in 1974 found 40 pairs. Numbers fell to 14 pairs by 1987, 20-24 were present in 1990-93, 17 in late May/early June 1996, declining to one in 1999.

On Dun the colony was concentrated on the lazy bed area at the west end of the island. Breeding numbers here declined from 34 pairs in 1969, to 24 in 1974, 4 in 1987, 2 in 1996 and none in 1999.

Soay has seen little change from 1971 when 3-4 pairs were found. There were 4 in 1999 and a complete island search in July 2000 found only 3 pairs, all in the Tigh Dugan boulder field.

Boreray had 10-15 pairs in 1971 and an intensive study in 1980 found 49 nests/territories. Breeding success was high, with an average of 1.6 chicks per pair counted on 35 territories (Duncan *et al* 1982). Thorough searches in June 1987 and 2000 found 38 territories and 26-31 pairs respectively.

Three pairs were on Levenish in June 1987 and this remains the only record.

Overall the species has declined from c120 pairs in 1974-80 to c35 pairs in 1999-2000.

Iceland Gull *Larus glaucoides*
Ten records up to 1978, but recorded annually since 1981 (at least 51 records) with up to 3 birds present in 8 years. Recorded every month except July and most common in April and May. Most are in first winter/second summer plumage, but 4 adults seen and one found dead. **Kumlien's Gull** *L g kumlieni*. Two adults present on various dates between 25 January-6 February 1994 (T J Dix, K J Douglas). One adult 21-22 February and 8 March 1995 (K J Douglas, R Eadie).

Glaucous Gull *Larus hyperboreus*
Over 70 records, most between March and May, but recorded in every month. Usually immatures (one or 2 summered 1975), but 3 adults seen and one found dead. Maximum count 4 in February 1997.

Great Black-backed Gull *Larus marinus*
Breeds. Resident, with a fluctuating winter population of several hundreds. The species was fairly common in 1894 and 1910, but probably increased after the evacuation in 1930. On Hirta there were 30 pairs in 1956, 40-50 in 1961-62 and 55 pairs in 1969. Twenty seven nests were located in 1974, 31 in 1976 and 23 pairs in 1977, but the total population in those years was probably 30-35 pairs. By 1987 there was a decline to 13 pairs and numbers have remained low up to the present. Counts have been: 14 pairs (1990), 13-14 (1993), 14 (1996) and 4 nests in 1999.

On Dun estimates of 10-20 pairs were made in the years between 1956-69, followed by an apparent increase from 15 to 40 nests between 1974-77. This was attributed to greater effort in nest finding as part of an ongoing study into gull/Atlantic Puffin interactions (K G Taylor). In 1987 12 pairs were found, a partial count in 1996 found 3 pairs and a complete island count found 2 nests in 1999.

On Boreray there were less than 15 pairs in 1971, 27-30 pairs in 1980, 15 in 1987 and 14 in 2000.

Soay held 10 pairs in 1971, 5 in 1987 and 4 in 1989. A complete island count found 11 pairs in July 2000.

There were 45 adults and at least 22 young on Levenish on 12 July 1975. A count from the sea in 1987 suggested 10 pairs, and landings on 9 May 1993 and 4 June 1997, found 3 and 4 pairs respectively. A single pair was on Stac an Armin in 1987, but there have been no records since.

Overall the St Kilda population has declined from c150 pairs in 1974-80 to c40 pairs in 1997-2000.

Black-legged Kittiwake *Rissa tridactyla*

Breeds; adults present at the colonies from March to August, rarely September. Only a few birds seen in the winter. The first complete surveys were made by Boyd (1960a, 1969) in 1959 and 1969 finding 7,770 and 11,485 pairs, respectively. Since 1977 surveys have used the apparently occupied nest as the count unit and assumed that the earlier counts are comparable, although the methods differ (Harris & Murray 1978). The 1999 survey (Mitchell *et al* 2002) found 3,886 AONs, the lowest number on record. (Table 10). The decline was found on all the islands with the largest on Boreray, down 1,777 AONs (-61%) compared with 1987, followed by Soay, down 924 (-71%), Hirta 472 (-22%) and Dun 250 (-22%). The colony on the Soay sound stacs has disappeared.

Monitoring on Hirta and Dun through land based counts suggests that the decline is an recent phenomenon, since numbers only started to decline between 1993 and 1996 (-34%) (Thompson and Walsh 1997). Previous to that, numbers of AONs on Hirta had actually increased between 1990 and 1993.

Figure 4 ***Lines demarcating areas of coast where Black-legged Kittiwakes and Common Guillemots were counted, 1959-99 (see Tables 10 and 11). After Boyd (1960a).***

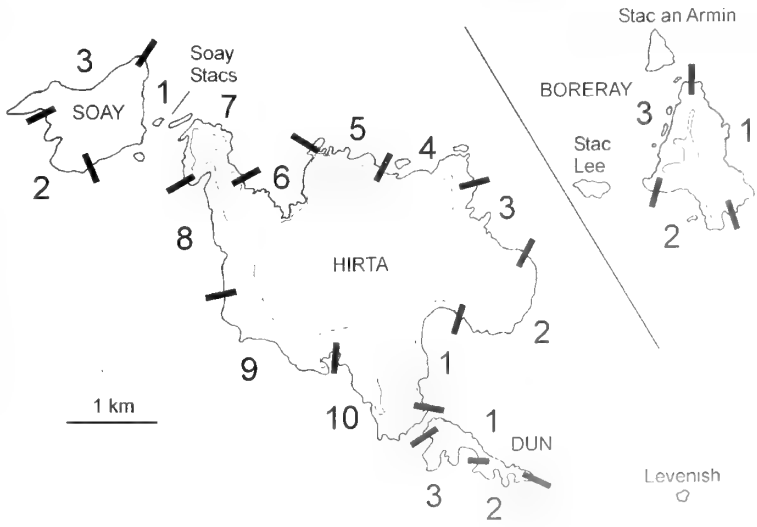


Table 10 *Counts of apparently occupied Black-legged Kittiwake nests on St Kilda 1959-1999. Areas follow those of Boyd (1960a).*

	Area	1959	1969	1977	1987	1999
Hirta	1	20	80	91	100	51
	2	20	50	0	0	26
	3	140	260	84	126	65
	4	730	1150	342	356	301
	5	70	180	11	134	103
	6	120	140	146	146	85
	7	530	910	334	435	435
	8	300	300	215	410	181
	9	50	0	0	0	0
	10	100	0	0	12	0
Total		2080	3070	1223	1719	1247
Dun[1]	1	180	190	182	192	128
	2	890	775	[1248]	[1039]	[853]
	3	250	310	[ ]	[ ]	[ ]
Total		1320	1275	1430	1231	981
Soay	1	410	470	346	462	111
	2	410	1100	270	585	228
	3	800	850	296	259	43
Total		1620	2420	912	1306	382
Soay sound stacs		150	80	83	79	0
Stac Lee		200	310	158	245	91
Stac an Armin		70	570	281	326	39
Boreray	1	270	830	596	811	250
	2	360	410	164	422	185
	3	1700	2520	999	1690	711
Total		2330	3760	1759	2923	1146
Levenish		0	0	0	0	0
Grand Total		7770	11485	5846	7829	3886

Sources: Boyd (1960a, 1969), Harris & Murray (1978), Tasker *et al* (1988) and Mitchell *et al* (2002).
Notes: [1] Dun areas 1, 2 & 3 follow Boyd (1960a), area 2 in 1977, 1987 & 1999 includes Boyd area 3.

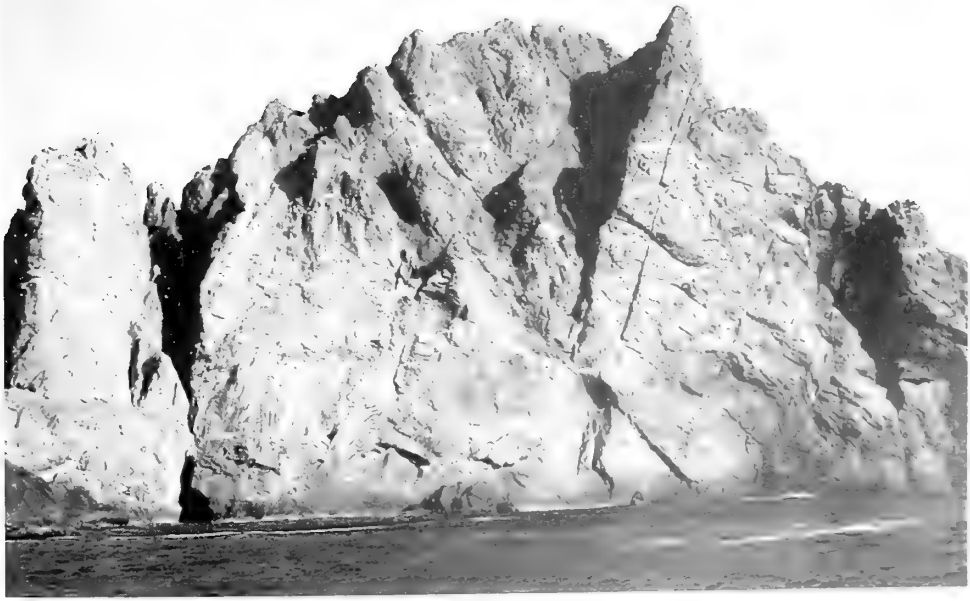
Sandwich Tern *Sterna sandvicensis*
Two on 6 July 1963. Singles 19-26 March 1969, 18 May 1986, 20 April 1993, 12 and 21-22 April 1996 and 2 June 1996.

Common Tern *Sterna hirundo* / **Arctic Tern** *Sterna paradisaea*
Both species have been identified, but most records refer to unidentified terns, and of those positively identified the majority have been Arctic Terns. Recorded April (3), May (5), June (2), July (2), August (6), September (2) and October (8 including 7 in 1961).

Common Guillemot *Uria aalge*

Breeds; adults present from late February to early August, odd birds at other times. The estimate of 3 million birds by Sands (1878) is obviously an exaggeration and the figure of 20,000 pairs in 1939 is also probably too high. The few descriptive accounts do not suggest many more birds than now and Harrison and Lack (1934) describe it as only "not uncommon" in 1931.

The first complete counts were made in 1959 and 1969 (Boyd 1960a, 1969). Harris & Murray (1978) found their 1977 counts to be significantly higher than those made by Boyd in 1959, but not higher than the 1969 counts. Since then the population on Hirta has remained stable, but increased on Soay and Boreray. Between 1987 and 1999 numbers on Boreray increased from 3679 to 4886, a rise of 33%, in contrast to the overall rise of just 3.3% in the whole group (22,705 to 23,442 individuals) (Table 11). There appears to have been a decline on Dun and possibly Stac an Armin, though the count here was made in less than ideal weather, which could have affected attendance by birds on the ledges and efficiency in counting (Mitchell *et al* 2002).



The west face and summit of Boreray (384m) (S Murray).

Table 11 *Counts of individual Common Guillemots on St Kilda 1959-1999. Areas follow those of Boyd (1960a).*

	Area	1959	1969	1977	1987	1999
Hirta	1	0	0	0	2	0
	2	70	110	10	10	61
	3	610	890	1205	1638	1084
	4	1970	5960	5569	4774	5250
	5	670	710	815	956	1261
	6	100	80	439	533	495
	7	1460	1260	1137	980	1067
	8	900	840	1399	957	1428
	9	500	330	288	488	115
	10	100	20	68	127	142
Total		6380	10200	10930	10465	10903
Dun[1]	1	30	380	644	379	371
	2	130	670	1333	[2269]	[1760]
	3	60	400	1829	[ ]	[ ]
Total		220	1450	3806	2648	2131
Soay	1	110	570	180	433	232
	2	610	890	950	672	1056
	3	1450	1700	725	1114	1294
Total		2170	3160	1855	2219	2582
Soay sound stacs		2680	1700	1855	1742	1822
Stac Lee		200	460	300	490	487
Stac an Armin		720	1880	1313	1436	571
Boreray	1	110	570	628	1005	2215
	2	610	890	790	1044	892
	3	1450	1700	578	1630	1715
Total		2170	3160	1996	3679	4886
Levenish		40	70	30	26	60
Grand Total		14580	21880	22085	22705	23442

Sources: Boyd (1960a, 1969), Harris & Murray (1978), Tasker *et al* (1988) and Mitchell *et al* (2002).
Notes: [1] Dun areas 1, 2 & 3 follow Boyd (1960a), but area 2 in 1987 & 1999 includes Boyd area 3.

Brünnich's Guillemot *Uria lomvia*
One 26 May and 8 June 1992 (T J Dix, J Vaughan).

Razorbill *Alca torda*
Breeds; birds at the colonies from late February to early August. The difficulties of counting a species with a preference for hidden nest sites makes accurate censusing impossible. Past counts are incomplete or guesses and nothing can be said with certainty about changes in the population. There have been 3 recent counts of individuals, c3500 in 1977 (Harris & Murray 1978), 3814 in 1987 (Tasker *et al* 1988) and 2521 in 1999 (Table 12).

Group numbers were lower in 1999 compared with 1987 (-34%), but this was mainly attributable to an apparently large decrease on Dun, down from 1809 to 819 (-55%).The largest colony is in the Fort boulder field on Dun. In both 1977 and 1987 there were an estimated 1000 birds at this site alone, in 1999 only 402 were counted. It would require repeated counts to determine whether or not this count represents an actual decline in breeding adults or whether it was conducted on a day of particularly low attendance. Otherwise birds were present at the same locations in all 3 surveys and in most cases in similar numbers.

Table 12 ***Counts of individual Razorbills on St Kilda 1977-1999.***

	1977	1987	1999
Hirta	1000	1221	1233
Dun	1634	1809	819
Soay	200	263	173
Soay sound stacs	60	8	24
Levenish	2	9	16
Stac Lee	99	15	14
Stac an Armin[1]	200-400	237	50
Boreray	?	252	192
Total	c3500	3814	2521

Sources: Harris & Murray (1978), Tasker *et al* (1988) and Mitchell *et al* (2002).
Note: [1] Stac an Armin counts from the land in 1977 and 1987, count from the sea in 1999.

Great Auk *Pinguinus impennis*
Bred up to the 17th century. The last British example is said to have been caught and killed on Stac an Armin in July 1840.

Black Guillemot *Cepphus grylle*
Breeds; adults present mid April, (rarely January) to August. Total of 10 pairs on Dun and Hirta in 1974-78, as recorded by most previous visitors. Counts between 1984 and 1999 suggest little change, maximum 9-12 pairs in 1987 and 1994. Around Soay, regularly at Geo nan Ron (1-2 pairs) and Gob a Ghaill (1-2). Few counts from Boreray, but 34 individuals seen on 16 July 1980.

Little Auk *Alle alle*
Dixon (1885) said it occurred sparingly in winter. Since 1957 most records have been of remains found in Village Bay. Recent records of live birds have been: one 29 October 1995, with up to 3 to 14 November, possibly 5 different to 26 November 1995. Singles 20 November 1984, 29 November-10 December 1996, 9-21 February 1997 and 28 November 1997.

Atlantic Puffin *Fratercula arctica*
Breeds; adults present early April to August, rarely September. The bulk of the population breeds on Soay and Boreray where access is difficult. On Hirta the population is small and scattered with the largest colonies in boulder fields. Only on Dun has regular monitoring been possible and the results show considerable fluctuations in the numbers of apparently occupied burrows (AOBs) between 1977 and 1999 (Harris & Rothery 1988, Thompson & Walsh 1997, Mitchell *et al* 2002).

The Hirta population declined in the 20th century, with most birds being lost in the period 1947-57, notably from the north slopes of Conachair (J Fisher). The lowest and most inaccessible of the remaining subcolonies here is much reduced in area since the 1970s (pers obs). Elsewhere the colonies appear to be stable with little apparent change to the main concentrations at Carn Mor and the Cambir. There are only 2 island counts: 8,100-13,500 pairs in 1975-76 (Harris & Murray 1978) and 1819 AOBs plus 6062 individuals in 1999-2000 (Mitchell *et al* 2002).

In 1974-76 the population on Dun was estimated at 40-60,000 pairs. After the introduction of fixed, randomly positioned sampling quadrats from 1977 to 1987, the variance of population estimates was substantially reduced. Numbers of burrows increased by 18% over that period, peaking at 42,000 AOBs in 1987. (Harris & Rothery 1988). The 1990 count was 27,500 AOBs (Thompson & Walsh 1997) and in 1999, 55,420 (44,000-69,534, 95% confidence limits) (Mitchell *et al* 2002).

On Boreray there have been 5 attempts at surveying the largest colony on the south slopes and all adopted similar methods. Burrow densities were established in a range of quadrats throughout the colony and the results multiplied by an estimated colony area. Estimates of AOBs were 41,000 in 1971 (Brooke 1972), 55,000 in 1977 (Harris & Murray 1978), 74,000 in 1980 (Duncan *et al 1982*), 42,500 in 1987 (Tasker *et al* 1988) and 38,161 in 2000 (Mitchell *et al* 2002). The 2 other major colonies, Sunadal and Clais na Runaich have been estimated previously, but only counted in 2000, with 8,424 and 2,492 AOBs respectively. A further 2000 AOBs were found elsewhere. Island totals are therefore, c100,000 AOBs (1977), c79,000 (1980), c63,000 (1987) and in 2000, 51,000 (47,520-54,667, 95% confidence limits).

Soay was thought to hold the largest colony in the group, and may well have done so at one time, but this is no longer the case. The first estimate was 77,000 AOBs in 1971 (Brooke 1972). The estimate of 150,000 in 1977 (Harris & Murray 1978) was based on one short visit, few quadrats and an optimistic assessment of Puffin areas not borne out by subsequent visits (pers obs). Tasker *et al* (1988) did not visit the island in 1987, but used the mean of these estimates, 115,000 pairs. In 1989 P R Moore spent 10 days assessing the colonies and estimated 39,500 AOBs (unpublished data). The 2000 survey subdivided the east slopes into 13 distinct, but adjacent, areas and counted all AOBs within them. Area 7, the Tigh Dugan boulder field could not be counted and was estimated at c2000 AOBs. Areas 14 and 15 were also estimated, at less than 500 AOBs each, giving a minimum island total of 27,514 AOBs (Mitchell *et al* 2002).

Small numbers breed on Stac an Armin, but the species may not now breed on Levenish.

The total for St Kilda in 1999/2000 was 135,752 AOBs (120,853-153,534 95% confidence limits). Although an apparent decrease over previous estimates in 1978 (310,000) and 1988 (230,500), more systematic counts need to be made before it is clear whether or not the population has indeed declined.

Rock Pigeon *Columba livia*
Almost certainly bred in 1884, but was soon extinct as Elliott (1895) found none in 1894 and by 1910 the inhabitants did not know the bird. However, it was breeding in 1930 and 5 birds were recorded in 1931, but only 2 in 1939. Since then there have been 13 records between 1958 and 1996. April (3), May (3), June (4), July (1), September (1) and November (1).

Stock Pigeon *Columba oenas*
Eight records between 1970 and 1995. May (2), June (2), July (3) and November (1). Maximum count 5, 23-31 May 1989.

Common Wood Pigeon *Columba palumbus*
About 25 records up to 1978, 65 records since. All between April and August except October (1) and November (2). Mostly single birds, maximum 3.

Eurasian Collared Dove *Streptopelia decaocto*
First recorded 29 April 1965 (D C Gwynne in MacMillan 1966) and an annual visitor since 1969, between 13 April and 30 September. Single record November 1990. Maximum counts, 26 in May 1997, 27 in June 1979. Several records from Boreray.

European Turtle Dove *Streptopelia turtur*
Forty five records mostly between 5 May and 23 July, with April (2) and September (10). Nearly all single birds, but 5 on 4 June 1979.

Common Cuckoo *Cuculus canorus*
Twenty three records up to 1977, 26 since then. All between 6 May and 26 June, except for singles on 25 April 1984, 11 April 1993 and 19-24 August 2000. In 1977 and 1978 at least 3 and 2 males respectively called regularly from mid May to late June. Recorded on Boreray 22 May 1979 and 23 May 1993.

Snowy Owl *Nyctea scandiaca*
Singles 14-28 November 1962, 30 March and 12-14 April 1968, 17 April 1972, male and female on various dates April-June 1973, male 1-26 May 1975, male 12-20 April 1993 and a male 19-22 May 1999.

Long-eared Owl *Asio otus*
Ten records of single birds between 1958 and 2000. February (1), March (1), April (3), May (1), June (1), August (1) and November (2).

Short-eared Owl *Asio flammeus*
Recorded February (2), March (3), April (13), May (33), June (3), July (2), September (1), October (5), November (7) and December (2). Nearly all records are of single birds, but 2 or more present in April 1986 and 1989, May 1993, November 1995 and late autumn 2000.

Common Swift *Apus apus*
Small numbers regular in June and July. Peak counts have been 19-50 birds in the late 1970s, but recent maximums have been less, 7 in June 1985, 5 in July 1990 and 12 in May 1996. Since 1983 most records have been of single birds, with rarely more than 3 together. Extreme dates 25 April and 22 September. Seen frequently on Boreray.

Alpine Swift *Apus melba*
One 12-16 May 1974 (Harris & Murray 1978).

[**European Roller** *Coracias garrulas*]
One sometime before 1841 (Wilson 1842). Record now considered unreliable (Thom 1986).

Hoopoe *Upupa epops*
One 16 May 1977 (Harris & Murray 1978).

Eurasian Wryneck *Jnyx torquilla*
Seven records. The first in 1910 then 6 between 1974 and 1993 in April (1), May (1), June (1) and September (4). All singles except 3 together 3 September 1988.

Calandra Lark *Melanocorypha calandra*
One 21 September 1994 (J Vaughan, S Money, T J Dix).

Greater Short-toed Lark *Calandrella brachydactyla*
Singles 29 May-5 June 1957, 22-26 May 1994, 19 May 1999 on Boreray, with another, or possibly the same bird on Hirta 28 May 1999 and 21 October 2000.

Sky Lark *Alauda arvensis*
A pair bred 1947 (Fisher 1948) and one sang in June 1970, May 1974 and through the summer of 1976. A bird was seen carrying food in June 1984. Since then there have been several records of singing birds in May and June, including one on Soay 7 May 1993. Otherwise ones and twos in all months with most records in April. Maximum count 6, 11 April 1994.

Horned Lark *Eremophila alpestris*
Singles 1 September 1976 (K G Taylor) and 22 September 2000 (A Robinson).

Sand Martin *Riparia riparia*
Thirty three records between 1 April and 26 June and 6 records between 5 July and 30 September. Nearly all single birds, maximum count 6 on 21-23 May 1989. One seen on Boreray 20 May 1992.

Barn Swallow *Hirundo rustica*
Present almost daily in most years between May and July, scarce thereafter. Extreme dates 5 April and 7 October, with one 15 November 1997. The majority of records are of less than 5 birds, maximum 20 before 1978. Since then only 16 records of 10 or more, maximum 24 in May 1992. Seen frequently on Boreray.

House Martin *Delichon urbica*
A pair bred in the Army base in 1990. Young hatched by 9 August, but died shortly after. Nest at the same site in 1991 held 5 eggs on 28 July and 2 young fledged on 24 August (J Vaughan). Most records between May and July with extreme dates 17 April and 17 September, with one 2 October 1998. Numbers commonly up to 5, frequently between 10 and 15, most often in May. Maximum count 37 on 20 May 1992. Five Boreray records, all in May.

Richard's Pipit *Anthus novaeseelandiae*
Singles 23 May 1984 (M P Harris), 20 September 1992 (J Vaughan) and 21 September 1994 (J Vaughan).

Tawny Pipit *Anthus campestris*
Singles 8 May 1974 (M P Harris), 20 June 1986 (P Duncan) and 29 April 2000 (A Robinson).

Tree Pipit *Anthus trivialis*
Recorded on 24 dates between 11 April and 13 June and 23 dates between 1 September and 6 October. Also 8 August 1958. Most are single birds, but twos and threes frequent.

Meadow Pipit *Anthus pratensis*
Breeds annually on Hirta in small numbers. Counts of pairs have been, 1931 (4-6), 1939 (8-17), 1947 (6), 1948 (2-3), 1956 (c10), 1957 (at least 20), 1960 (1), 1961 (at least 3),1962 (1), 1963 (6), 1976 (2), 1977 (3), 1984 (20-30), 1990 (10-12) and 1993 (23). Has bred on Boreray and Soay. Common passage migrant from mid April to mid May and in August/September. Also recorded in February, March, October and November. Maximum estimate of 7500 in a day exceptional, highest daily total since 1979 has been 3000 on 7 September 1984.

Red-throated Pipit *Anthus cervinus*
Seven single birds recorded between 1910 and 2000. May (2), July (1), September (2) and October (2).

Rock Pipit *Anthus petrosus*
Most birds are summer visitors from March to October, but a few over winter, (10 in 1958-59, c20 in 1961-62, 12 in 1980-81 and 4 in 1987-88). In 1931 there were 105 pairs on Hirta, 16 on Boreray, 19 on Dun and 15 on Soay. In 1939, 60 birds were counted on Hirta and 4-8 pairs on Dun. The 1957 and 1960 estimates were over 100 pairs on Hirta, and in 1963 there were at least 75 pairs nesting inland. The most recent counts have been 17 pairs on Boreray in 1980 (Duncan *et al* 1982) and 70-71 pairs on Hirta in 1993 (Vaughan & Love 1994). Has been seen on Stac Lee in 1977 and 1996, frequently on Levenish (3 pairs in May 1989) and Stac an Armin. An adult with fledged young seen 5 August 1993 suggests they may breed there. **Scandinavian Rock Pipit** *A p littoralis* One 22 May 1992 (T J Dix in Outer Hebrides Bird Report 1997).

Buff-bellied Pipit *Anthus rubescens*
One was shot 30 September 1910 (Clarke 1911).

Yellow Wagtail *Motacilla flava*
A pair bred in Village Glen in 1998. The nest was found on 18 July with 3 well grown young, all of which fledged successfully. The female and juveniles were present throughout August and early September, the male from 29 April to 31 July. Excluding the 1998 breeding pair, there were 41 records between 8 May and 10 July, and 7 between 9 August and 7 October.

Most, including the male of the breeding pair, were identified as the **Grey-headed Wagtail** *M f thunbergi* and there appear to be only 5 definite records of the British race *M f flavissima*, 3 in May and 2 in September. Records mostly of single birds, but up to 6 present in May 1992, 3 or 4 in May 1994 and 3 in September 1993. Recorded on Boreray on 21 May 1990. **Blue-headed Wagtail** *M f flava* One 5 May 2000 (A Robinson).

Citrine Wagtail *Motacilla citreola*
Singles 22-24 September 1992 (T J Dix, J Vaughan) and 21-22 November 1995 (I R Hartley).

Grey Wagtail *Motacilla cinerea*
Twenty three records. March (3), April (1), May (4), June (1), August (5), September (1), October (6) and November (2).

White Wagtail *Motacilla alba*
The most obvious migrant on St Kilda with 30-100 a day recorded in most springs. Earliest arrival has been 9 March, but the main passage is from the end of April to the end of May. Relatively few birds recorded in June or July, but one summered 1962 and 2 displayed 2-11 June 2000. Autumn passage August-September with some birds into October. Seen frequently on Boreray. **Pied Wagtail** *M a yarrelli*. Bred in Village Glen in 1993. One or more adults present from 6 April, but no evidence of breeding until 10 July when a male was regularly seen carrying food. Four fledged young appeared on 23 July and were present throughout August. Last record 30 September (Vaughan & Love 1994). A male was seen carrying food in June 1994, but no evidence of breeding was found. Excluding the 1993 breeding record birds have been recorded in March (5), April (24), May (8), June (11), July (3), August (13), September (8), October (2) and November (2).

Bohemian Waxwing *Bombycilla garrulus*
One 14 November 1961 (Fullager 1962).

Winter Wren *Troglodytes troglodytes troglodytes*
Singles 4 November 1965 (Grubb 1965) and on Boreray 2 July 1984 (P R Moore).
St Kilda Wren *T t hirtensis* Resident. Population estimates for Hirta in 1931, 1948, 1960 and 1962 ranged from 45 to 100 pairs. Organised predawn counts of singing males gave 117 in 1957 (Williamson 1958b), 145-157 in 1990 (S G Holloway) and 113-117 in 1993 (Vaughan & Love 1994). Within the Village head dyke counts have been consistent at 6-8 pairs between 1931 and 1987 (7 nests found in 1984), but 19-23 singing males found in 1990 and 25-27 in 1992. This increase was not mirrored elsewhere on Hirta. The Dun population has been estimated at 10-25 pairs and a dawn census in May 1977 found 20 singing males. Estimates

The St Kilda Wren T thirtensis *is unique to these islands (J A Love).*

for Boreray and Soay have ranged upward to 45 pairs, but daytime counts of singing males have been, Boreray 9 (1980), 12 (1990) and 10 (1993). Soay 8 (1989), 13 (1993) and 12 (1999). Three or 4 pairs were on Stac an Armin in 1957, but there are no recent records. Not seen on Stac Lee or Levenish. There is no evidence of gross changes in numbers and the 1957 estimate of not less than 230 pairs for the islands is probably still valid.

Hedge Accentor *Prunella modularis*
Recorded April (8), May (9), July (1), September (2) and October (3). One on Boreray 31 May 1979. All singles except 2 together on 3 dates and 3 on 27 September 2000.

European Robin *Erithacus rubecula*
Twelve records up to 1978, more than 80 since 1979. Recorded in all months, but most in April-May and September-early October. Two over wintered 1993-94. Maximum count 25, 30 October 2000.

Thrush Nightingale *Luscinia luscinia*
One trapped 28-30 May 1975 (Harris & Murray 1978). One on Stac an Armin 23 May 1993 was thought to be this species, but the identification was not certain (J Vaughan).

Common Nightingale *Luscinia megarhynchos*
One trapped 12 May 1958 (Eggeling 1959) and one 19 May 1994 (J Vaughan).

Bluethroat *Luscinia svecica*
Twelve records between 1959 and 1995 in May (5), September (6) and October (1). All singles except 2 on 20 May 1993 and 18 September 1995.

Black Redstart *Phoenicurus ochrurus*
Twenty two single birds between 1958 and 2000 in April (3), May (12), July (1), October (2) and November (4).

Common Redstart *Phoenicurus phoenicurus*
A very early record 31 March-3 April 1965, otherwise 10 spring records between 6 May and 3 June, with another on 29 June. Twenty seven records between 3 September and 12 October and one late record 31 October 1995. Mostly single birds, but 5 or more present in May 1996, September 1995 and 26 September 1999.

Whinchat *Saxicola rubetra*
Earliest record 27 April, otherwise May (20), June (3), August (2), September (27) and October (2).

Stonechat *Saxicola torquata*
One pair bred in 1975, the young fledging about 18 August (Harris & Murray 1978). Otherwise 10 spring records between 10 March and 24 April. Also singles August 1886, 14 May 1979, 22 September 1999 and 26 September 2000.

Northern Wheatear *Oenanthe oenanthe*
Summer visitor. Breeds annually in varying numbers on Hirta, sporadically on Boreray. Population estimates, all in pairs, have been: 1894 (6 all near the Village), 1931 (10), 1947 (8 in Village Glen), 1956 (14), 1957 (25), 1961-62 (8-10), 1963 (at least 48) and 1977 (19). The more recent estimates are; 1990 (30-40), 1991 (30), 1993 (45-46) and 1994 (50-60). Although widely distributed there is an obvious concentration of pairs in the Village Glen, even in years of low numbers. On Boreray only 1-2 pairs have been recorded as probably breeding, in 1931, 1971, 1987 (fledged young seen), 1990 and 1992. No breeding records from Soay or Dun.

Also a common migrant from 31 March until late June and from August to November. Many of these birds are of the Greenland race *O o leucorrhoa*.

Black-eared Wheatear *Oenanthe hispanica*
Female collected 21 September 1911 (Clarke 1911).

Rufous-tailed Rock Thrush *Monticola saxitilis*
Single female 17 June 1962 (Boyd & Waters 1963).

White's Thrush *Zoothera dauma*
One 21 September 1993 (J Vaughan).

Grey-cheeked Thrush *Catharus minimus*
One found dead 29 October 1965 (Grubb 1966).

Ring Ouzel *Turdus torquatus*
Twenty five spring records, mostly singles, between 23 March and 23 May, also 3 records in June and one 15 August 1989. In the autumn period, at least 9 records between 1 October and 10 November. Maximum counts have been 9, 4 October 1993 and up to 7 between 15-26 October 1996.

Common Blackbird *Turdus merula*
A winter visitor in small numbers (c5 wintered in 1961-62, after 17 counted on 12 November 1961, 3 over wintered 1964-65, up to 9 in January 1981). These wintering birds arrive October/November (more than 60 present 30 October 2000) and remain until late March. Otherwise common with records in April (42), May (28), June (13), July (8), August (2) and September (1). One or 2 singing males have been present May to July in several years, and one was seen carrying nest material in May 1990, but there was no evidence of breeding.

Eyebrowed Thrush *Turdus obscurus*
Single 1st winter 1-2 October 2001 (A Robinson, SERCO).

Fieldfare *Turdus pilaris*
Visitor in small numbers in most years, with only some 30 records up to 1978, but more than 60 since then. Recorded in all months except August and most common in April and

October. One or more birds over wintered 1958-59. Maximum counts 30 birds (before 1978), 21 in November 1995 and at least 50 on 30 October 2000.

Song Thrush *Turdus philomelos*
Probably bred 1840 and 1847 (Lack 1930). Apparently a regular winter visitor 1829-43 (MacKenzie 1905), but only 20 records up to 1978 and 42 subsequently. Usually single birds, but 4 on 24 April 1986 and 23 April 1999, with an exceptional 30 or more, 30 October 2000. Recorded in all months except July, and most frequent from March to May.

Redwing *Turdus iliacus*
Autumn passage from early October (rarely mid September) with up to 2000 birds 20 October 1995 and 30 October 2000, 1000 on 15-20 October 1998 and up to 900 in early November 1975. A few birds over winter and these are augmented by migrants in March and April. Spring numbers can be high, with falls of 1000 to 2500 birds in 6 Aprils between 1982 and 1995. Odd birds regularly remain until early June, singles summered in 1976, 1977 and 1994. Most subspecific identifications refer to the Icelandic race *T i coburni*.

Mistle Thrush *Turdus viscivorus*
One 21 March 1969, several in first half of April 1969, one 26 August 1976. Two 9-19 March 1996 and one 20 April 2000.

American Robin *Turdus migratorius*
One 14 January-15 February 1975 (D Neal, C Brown).

Common Grasshopper Warbler *Locustella naevia*
Singles 1 May 1965, 8-11 May 1986, 25 May 1996, 4 May 1999 and 2 May 2000.

Sedge Warbler *Acrocephalus shoenobaenus*
A total of 35 birds recorded between 23 April and 14 June in 13 springs and 9 singles between 16 August and 26 September, in different years.

Blyth's Reed Warbler *Acrocephalus dumetorum*
One 4 October 1993, found dead 7th (J Vaughan, T J Dix, K J Douglas).

Marsh Warbler *Acrocephalus palustris*
Female shot 6 September 1910 (Clarke 1911). Singles 27 May 1994 (J Vaughan) and 18-19 September 2000 (A Robinson).

Eurasian Reed Warbler *Acrocephalus scirpaceus*
A total of 18 birds recorded between 22 August and 29 September and one on 30 October 1995 in 7 autumns between 1986 and 2000.

Icterine Warbler *Hippolais icterina*
One 11 September 1992 (J Vaughan, T J Dix).

Subalpine Warbler *Sylvia cantillans*
One collected 15 June 1894 (Clarke 1911). Singles 2-14 June 1979 (W Wright *et al*) and 24 May 1994 (T J Dix).

Sardinian Warbler *Sylvia melanocephala*
One 23 May 1994 (J Vaughan, T J Dix, D Lee).

Barred Warbler *Sylvia nisoria*
A total of 15 birds recorded between 13 August and 25 September, in 10 autumns between 1910 and 1995.

Lesser Whitethroat *Sylvia curruca*
Six spring records between 18 May and 13 June, all single birds, but up to 3 present 23-24 May 1994. In autumn most records between 2-28 September involving at least 17 individuals, with several present on 14 September 1910. Singles 7 October 1911 and 8-11 August 1995.

Common Whitethroat *Sylvia communis*
About 13 individuals between 11 May and 3 June 1955-59. Since 1966 19 records of singles between 1 May and 3 June, one in July and 9 autumn records between 22 August and 26 September. One on Boreray 28 May 1979.

Garden Warbler *Sylvia borin*
Recorded 12 springs between 15 May and 12 June (16 records) and 19 autumns between 10 August and 18 October (27 records).

Blackcap *Sylvia atricapilla*
Recorded 10 springs between 25 April and 31 May (12 records) and 14 autumns between 26 August and 13 November (38 records). About equal numbers of males and females have been recorded.

Yellow-browed Warbler *Phylloscopus inornatus*
Singles 20 September 1957, 22-23 and 24 September 1990, 21 September 1994, 31 October 1995 and 25 September 2000.

Dusky Warbler *Phylloscopus fuscatus*
One 4 October 1993 (T J Dix, K J Douglas, J Vaughan).

Wood Warbler *Phylloscopus sibilatrix*
Singles 4-5 August and 13-17 August 1957, 6 September 1965, 23 May 1990, 19 September 1992 and 18 and 27 May 1994.

Common Chiffchaff *Phylloscopus collybita*
Few spring records up to 1978 (total of 9 birds), but subsequently recorded in 13 springs with up to 65 records between 5 April and 24 June. One remained and sang from 1 April to

3 June 1965, also several records of singing birds in May 1992, and one singing on Soay 7 May 1993. Less common in autumn with records in August (4), September (12), October (6), November (4) and December (1).

Willow Warbler *Phylloscopus trochilus*
Recorded in only 6 springs up to 1978, but in most years since then, between 3 April and 22 June. The commonest warbler in the autumn with records between 2 August and 30 October. Numbers are usually very small, but it was fairly numerous on 6 September 1910 and the maximum count since then has been 8 on 23 August 1999.

Willow Warblers/Chiffchaffs have also been reported 26 April-30 July (18 dates) in August (10 dates) and once in November.

Goldcrest *Regulus regulus*
Up to 5 birds noted between 29 March and 15 May in 20 springs (at least 28 records). Less common in autumn with 18 records between 31 August and 22 November.

Spotted Flycatcher *Muscicapa striata*
A total of 35 records of up to 3 birds between 27 April and 23 June, also singles in July (1) and September (4) and two, 2 October 1998.

Red-breasted Flycatcher *Ficedula parva*
Singles 14 October and 5-8 November 1966, 9-10 June 1990 and 15 June 1996.

Collared Flycatcher *Ficedula albicollis*
Single male 24 May 1992 (T J Dix, J Vaughan).

Pied Flycatcher *Ficedula hypoleuca*
Twelve records in 7 springs (7 May-19 June) and 8 records in 7 autumns (11 August-5 October) all between 1961 and 1998. Most are single birds, but 2 on 11-12 May 1968 and 19 May 1994, with 3 on 11 August 1975.

Great Tit *Parus major*
One April 1981 (W Wright).

Eurasian Golden Oriole *Oriolus oriolus*
Single adult males found long dead 23 July 1975 (Harris & Murray 1978) and 18 May 1994 (J Vaughan).

Red-backed Shrike *Lanius collurio*
In spring seen 13 June 1987 (1 bird), 31 May 1988 (1), 8 June 1990 (2), 15 June 1996 (1), 25 May 1997 (1) and on Boreray 27 June 2000 (1). Two autumn birds 16 September 1993 and 18 September 2000.

[**Lesser Grey Shrike** *Lanius minor*]
A single black, grey and white shrike with pinkish underparts on 5 May 1977 was most probably this species (S Moyes, W Wright).

Great Grey Shrike *Lanius excubitor*
One 19 April 1994 (S Paterson).

Eurasian Jackdaw *Corvus monedula*
Rare visitor in 19 years between 1911 and 1995. Fourteen records between 5 April and 11 July, maximum count 11 birds. Nine autumn/winter records between 23 October and 22 January, maximum count 8 birds.

Rook *Corvus frugilegus*
Large numbers in the winter of 1893, but otherwise a rare visitor, with records in 14 years up to 1997. Numbers very small and maximum counts have been up to 3 during 19 March-1 April 1969 and 23-24 October 1995. Recorded January (2), February (2), March (4), April (12), May (5), June (1), August (1), September (1), October (1), November (2) and December (1).

Carrion Crow *Corvus corone*
Single birds recorded in 4 recent springs, with up to 5 present April to June 1989. Also one 30 August 1959, one or 2 in September 1989, and 7 from 22 October to 22 November 1995.
Hooded Crow *C c cornix*. Breeds, but few confirmed records since 1979, with estimates of no more than 3 pairs on Hirta in any year. Nests rarely found (the last in April 1985) and most breeding records refer to fledged young. On Dun bred regularly 1974-1978 and also in 1993. Single pairs have been seen on Boreray and Soay (2 pairs in June 1989), but there are no confirmed breeding records, although it was thought likely to have bred on Boreray in 1980 (Duncan *et al* 1982). Earlier population estimates have been 6 pairs or families in 1960, 2-3 pairs 1961-63, 3-4 pairs in 1969, but only one in 1971. Far more numerous in 1927-28 with perhaps 10 pairs and up to 40 birds seen together (Cockburn in Harrison & Lack 1934), but down to present level by 1931. Migrants appear in very small numbers in spring and autumn, occasionally numbering 10-15 birds. An unusually large flock of 21 on 10 June 1963.

Common Raven *Corvus corax*
Breeds. In 1996-2000 one or 2 pairs were present on Hirta, Dun and Soay combined, with another on Boreray, but no nests were found or young seen. Earlier accounts suggest 3-5 pairs on Hirta and Dun, but there were 5-6 in 1963. In 1974-76, 4-6 pairs were present on Hirta and Dun, but no nests were found, nor was any young fledged. In contrast, in 1977 there were 3 pairs on Hirta (although only 2 nests found) and a pair with a nest on Dun. These fledged at least 7 young. There was an additional one pair on Hirta whose nesting success was unknown. Since 1980 no more than 1-2 pairs have been recorded annually on Hirta and Dun (but 3 pairs in 1984 and 1993) with one pair on both Soay and Boreray (2 there in 1989). A nest was found on Boreray in 1979 and another in 1980, but none since on any island. Pairs have been seen on Levenish (1986) and Stac an Armin (1997), but are not thought to breed there. Fledged young have rarely been confirmed and the most recent

record is of a pair with 3 flying young on Boreray in May 1992. Annual maximal counts of birds have been 16 (1961-62), 14 (1963 & 1965), 12 (1968), 19 (1971), 18 (1975), 9 (1980), 6 (1984 & 1989), 5 (1993), 6 (1994), 5 (1996) and 7 (2000).

Common Starling *Sturnus vulgaris zetlandicus*
Breeds. Has been regularly estimated at between 100 and 300 pairs, based on counts of adult flocks in spring and fledged juveniles in June/July. Hirta estimates have been in the range 100-200 pairs since 1927-28. An attempt at a breeding census in 1963 found 34 pairs in the Village, 14 pairs elsewhere inland, with an unknown number on the cliffs, but in total no more than 100 pairs (Williamson 1964). Flocks are present on Soay and Boreray from May to August, but breeding numbers are unknown. Breeds on Dun in very small numbers and juveniles have been seen on Levenish and Stac an Armin. Migrants appear in most autumns, and some birds overwinter, up to 100 present in January 1981 and 1990.

Rosy Starling *Sturnus roseus*
Singles July 1925, 18-19 June 1974, 7-12 August 1984 and 7 August 1998.

House Sparrow *Passer domesticus*
Recorded 11 May 1958, 7-21 July 1960 (4 birds), 5-8 May, 2-3 and 15 July and 14 August 1962 (one or more), August 1974, 25-26 May 1975, 25 April 1976 and 2-12 July 1992 (4 birds).

Eurasian Tree Sparrow *Passer montanus*
Bred 1884, 1896, 1902, 1910-11 and 1914. Then followed a gap until 1962 when at least 4 and possibly 6 pairs bred (Waters 1963b). In 1963 there were 3 pairs, in 1969 2 or 3 pairs had nests, in 1970 there were none, but there were 3 pairs again in 1971. In the last year 3 birds were seen on Soay (Brathay 1972). Singles or small flocks occurred in many earlier years between May (commonest) and August. Since 1979 it has become a scarce visitor with records in 5 years, all in May (4) and June (6). Flock of 20 in May 1980, otherwise no more than 4 birds seen.

Chaffinch *Fringilla coelebs*
Most common in spring with more than 40 records between April and early June. Also records in February (1), July (1), September (1), October (6) and November (4). Mostly single birds, rarely up to 3 present.

Brambling *Fringilla montifringilla*
Recorded March (1), April (9), May (20), September (6), October (4) and November (1). Mostly in ones or twos, but 5 on 13 April 1993.

European Greenfinch *Carduelis chloris*
Two on 10 October 1911, 5 on 18 August 1978 and singles 25 May 1966, 17 August 1975, April 1981 and 21 May 1993.

European Goldfinch *Carduelis carduelis*
Two on 9 November 1961. Singles on 21-25 May 1977 (with 2 on 26 May), 22-23 May 1992 and 22 April 2000.

Eurasian Siskin *Carduelis spinus*
Infrequent visitor in 14 years since 1961. Usually singles, but 5 birds on 29 July 1964 and at least 25 on 24 September 1993 and 60 on 28 September 2000, with a few remaining into October. Also recorded April (5), May (4), June (5), July (1), September (6), October (1), and November (2).

Common Linnet *Carduelis cannabina*
Singles 31 May and 1 June 1977, 20-24 May 1994, 11 May 1998, 22 May 1999 and 15 May 2000.

Twite *Carduelis flavirostris*
Previously bred on Hirta with 13 pairs in 1931 (plus one on Boreray), 10-11 pairs in 1939 (plus 2 on Dun), 13 pairs in 1947, at least 4 pairs in 1948, no more than 10-11 pairs in 1956, few pairs only in 1957, 12-25 pairs not all breeding, in 1960, 10 pairs in 1961, one in 1962, 17 pairs in 1963, 2-3 pairs in the Village in 1970, 8-10 pairs on Hirta in 1971. Birds sang in 1975, 1976 and 1977 and summered April to 15 September 1984. Always a summer visitor from March (once 24 February) to September, sometimes October, but now less common and rare in autumn. Recorded in 8 years since 1984, April (3), May (3), June (2), July (1), August (1) and September (1). Counts of ones and twos, except 12 September 1986 (10 birds).

Lesser Redpoll *Carduelis caberet* / **Common Redpoll** *Carduelis flammea*
The Greenland and Mealy races, *C f rostrata* and *C f flammea* have been recorded, but not all records have been identified to species and it is possible that *C. caberet* has also occurred. Thirty records of up to 20 birds between 21 August and November, 18 records of ones or twos between 8 May and 28 June, and 2 records of single birds in July 1994 and 2000.

Arctic Redpoll *Carduelis hornemanni*
Singles 21 September and 1 October 1990 (S G Holloway).

Common Crossbill *Loxia curvirostra*
An irruption of the species into Scotland took place in 1990, and the first birds reached Hirta on 4 June. These were followed by successive waves of arrivals through to mid August, when numbers began to dwindle until the last sighting on 26 September. Peak numbers were: up to 200 in June, 90 in July, 40 in August and 6 in September, but the total number passing through was probably much higher. Otherwise recorded in 12 years, with 20 records between 13 June and 9 August and a single bird on 17 September 1910. Up to 20 in 1956 and 1959 and 50 in 1962.

Common Rosefinch *Carpodacus erythrinus*
Three birds 8-19 September 1910, 2 on 22-23 May 1993, otherwise 9 single birds between 21 May and 8 June, and 3 between 8 and 18 September.

[Pallas's Rosefinch *Carpodacus roseus*]
One 16 May-13 June 1995 (K J Douglas), is assumed to be an escape from captivity.

Common Bullfinch *Pyrrhula pyrrhula*
Single male 29 October 1996 (R Cockburn).

Hawfinch *Coccthraustes coccthraustes*
Singles 30 May 1969, 18 May 1972 (for about 3 weeks), 28 May 1992, 9-10 May 1999 and 18 April 2000.

Evening Grosbeak *Hesperiphona vespertina*
One 26 March 1969 (Picozzi 1971).

Tennessee Warbler *Vermivora peregrina*
One 20 September 1995 (T J Dix, K J Douglas).

Hooded Warbler *Wilsonia citrina*
One 10 September 1992 (J Vaughan, (Dix 1977)).

Lapland Longspur *Calcarius lapponicus*
Up to 20 together in 17 Septembers, including 3 on Boreray on 15 September 1911, with some birds remaining into October, also 2 on 8 November 1995 and 17 November 2000. Maximum count 30 on 14 September 2000. Spring records, 2 on 10 May 1972, singles 20-23 May 1984 and on Boreray 26 May 1999.

Snow Bunting *Plectrophenax nivalis*
Bred in 1913 (Lack 1930). A pair sang and displayed in May and June 1993, but there was no evidence of breeding (Vaughan & Love 1994). Regular migrant late September-November (maximum count c80), occasional birds stay over winter. Spring passage February-end April with a few birds recorded in May (20 years), June (6) and August (1).

Yellowhammer *Emberiza citrenella*
Singles 18 June 1884, 17 May 1960 on Boreray, 21-23 April 1987 and 2-7 May 2000.

Ortolan Bunting *Emberiza citrenella*
Recorded on several dates 1-16 September 1910 and on 2 September 1911. Singles 20 May 1975, 20 September 1992 and 26 April 1993.

Rustic Bunting *Emberiza rustica*
Singles 26-27 May 1981, 10-11 June 1990, 10 May (female) and 27 May (male) 1992, 17 May 1994, 21 May 2000, 20 September (male) and 25 September–1 October (1st year / female) 2000.

Little Bunting *Emberiza pusilla*
Two on Boreray 15 September 1911 (Stout in Clarke 1911) and one 18 September 2000 (A Robinson).

Yellow-breasted Bunting *Emberiza aureola*
Single collected September 1910 (Clarke in his edition of Saunders (1927)) and one 5-6 September 2000 (A Robinson).

Reed Bunting *Emberiza schoeniclus*
Ones or twos between 19 April and 29 May (15 records in 10 years). Singles 21 March 1969, 4 September 1976 and 29 September 2000.

[**Red-headed Bunting** *Emberiza bruniceps*]
Eight records of males in 7 years. May (2), June (3), July (2) and September (1). Birds often remain for several weeks and it is assumed that all are escaped cage birds.

Corn Bunting *Miliaria calandra*
Probably bred 1840, 1879 and 1896. Since then single birds on 17 and 19 April 1988 (J Evans) and 17-20 May 1957 (Williamson & Boyd 1960).

Bobolink *Dolichonyx oryzivorus*
One 28 September 1986 (D Miller).

Records not accepted by British Birds Rarities Committee.

Greater Yellowlegs *Tringa melanocephala* One 14 November 1995.
Eastern Phoebe *Sayornis phoebe* One 12 May 1994.
Pechora Pipit *Anthus gustavi* One 23 September 1990.
Desert Wheatear *Oenanthe deserti* One 20-23 October 1999.
American Robin *Turdus migratorius* One 31 October 1994.
Olive-tree Warbler *Hippolais olivetorum* One 22 August 1999.
Spectacled Warbler *Sylvia conspicillata* One 10 and 22 September 1995.
Arctic Warbler *Phylloscopus borealis* Singles 26 September 1990, 20 September 1995.
Arctic Redpoll *Carduelis hornemanni* One 29 April 1997.
Black-headed Bunting *Emberiza melanocephala* One 5 July 1989.

Conclusions

Seabirds

St Kilda is one of the most important seabird stations in the North Atlantic, with some 330,000 breeding pairs of 17 species. However, only 5 occur in large enough numbers for the populations to be considered important in a British context (Table 13). The Northern Gannet is by far the most important since about 30% and 22% of the British and north east Atlantic populations are on Boreray and its Stacs (Murray & Wanless 1997). The 135,000 pairs of Atlantic Puffins constitute about 25% of the British total, but the Icelandic and Norwegian populations are several times larger. Even following the dramatic spread of the Northern Fulmar over the last 100 years, St Kilda is still the single largest colony, with some 13% of the British birds (Lloyd *et al* 1991). The islands hold most of the British population of Leach's Storm-petrels and it is the only colony in the eastern Atlantic to rank with those in North America. European Storm-petrels are far fewer than was anticipated before 2000, but the colony is still important in a British context.

Table 13 *Status of breeding birds based on the last 50 years records.*

	Annual (year of colonisation if known)	**Irregular or rare in period** (No. of records, p = probable)	**Bred in earlier years**
Seabirds	Northern Fulmar Manx Shearwater European Storm-petrel Leach's Storm-petrel Northern Gannet European Shag Common Eider Great Skua (1963) Mew Gull (1979) Great Black-backed Gull Lesser Black-backed Gull Herring Gull Black-legged Kittiwake Razorbill Common Guillemot Black Guillemot Atlantic Puffin	Arctic Skua (1)	Great Cormorant (p) Mew Gull (1) Great Auk
Waders/ducks	Eurasian Oystercatcher Common Snipe	Common Teal (1) European Golden Plover (5) Whimbrel (17) Common Redshank (p) Red-necked Phalarope (1)	
Land birds	Common Raven Hooded Crow St Kilda Wren Northern Wheatear Meadow Pipit Rock Pipit Common Starling	Common Kestrel (1) Peregrine Falcon (10) Sky Lark (1) House Martin (2) Yellow Wagtail (1) Pied Wagtail (1) Stonechat (1) Eurasian Tree Sparrow (4) Twite (8)	White-tailed Eagle Common Kestrel (p) Peregrine Falcon Corn Crake Rock Pigeon Eurasian Tree Sparrow Twite Song Thrush Snow Bunting (1) Corn Bunting

During the 19th century, the inhabitants of St Kilda killed large numbers of seabirds for food and feathers. Mackenzie (1905) estimated annual harvests of 12,000 young Northern Fulmars (from 20,000 hatched), and 2,000 young and 2,000 adult Northern Gannets, while Sands (1878) calculated 89,600 Atlantic Puffins killed in 1876. Lesser numbers of other species were also taken. Clarke (1912) was told that 9,600 were salted down in 1910. By then the islanders depended less on birds for food. The human impact dwindled to nothing before the evacuation of the people in 1930. This relaxation of predation was soon followed by an increase in the number of Fulmars (Harvie-Brown 1912) which continued until the 1980s. The increases in both Gannets and Fulmars are presumably due to an improvement in the environment, or the capacity of the species to cope with the environment, as much as to the cessation of predation as all British populations have been, and are still, expanding (Fisher

1952, Lloyd *et al* 1991). The majority of the Puffins on Hirta disappeared sometime between 1947 and 1957-60 and the population on Dun possibly declined slightly later (Harris & Murray 1977). These changes were probably caused by fluctuations in the food available near the breeding colonies (Harris 1976, Harris & Hislop 1978). The Puffin population on Dun increased slightly in the period 1974-76, declined again by 1978 and has fluctuated widely since then. The population remains large (Mitchell *et al* 2002), despite a continuing decline in breeding success and fledging weight since the early 1970s (Harris *et al* 1997).

The St Kildans persecuted Great Black-backed Gulls, so unsurprisingly they increased following the 1930 evacuation. Numbers remained constant from the 1950s to the early 1980s, but then declined by 75%. Lesser Black-backed Gulls also increased in the 1950s; since then there have been great variations in the population estimates, but a decline begun in the 1980s accelerated in the 1990s and could soon result in the loss of the species as a breeding bird. Herring Gull populations remained stable for at least 50 years up to the 1980s, but by 2000 the species had all but gone from Dun, Hirta and Soay and numbers on Boreray have been reduced by half.

The common factor, if there is one underlying these declines, is not known; food shortages may have played a part, but this is unlikely to be the whole story. For example the numbers of Great Black-backed Gulls on Dun dropped from 40 pairs to 2 pairs in 20 years, but their main prey the Atlantic Puffin, remains abundant.

Great Skuas have been present in relatively small numbers since the 1960s, but the dramatic surge in the population in the 1990s, as a result of increased immigration, may yet have a detrimental effect on other breeding species, particularly the nationally important populations of small petrels (Phillips *et al* 1999).

Since 1969 there has been a small, but not uniform, increase in Common Guillemot numbers throughout the islands, with a decline on Dun, a substantial increase on Boreray and Hirta remaining stable. Razorbills have proved more difficult to monitor and single counts in 1987 and 1999 suggest numbers have decreased at the main colony on Dun, with little apparent change in numbers and distribution elsewhere.

Black-legged Kittiwake numbers are now the lowest recorded in 40 years, a decline that started in the early 1990s and accelerated after the total breeding failure in 1996. The long term monitoring in place on Hirta will show if this decline continues in the future, although at present the Hirta colonies are the least affected.

Waders

Eurasian Oystercatchers were common up to 1993 with c50 pairs on Hirta, but, apparently as a result of Great Skua predation on both adults and young, numbers have more than halved. Common Snipe were uncommon prior to 1930, but have since increased greatly, although the few counts of displaying birds suggest a fluctuating population. Whimbrel were not proved

to breed until 1964, but could have nested earlier, they are currently a lost breeding species, with no confirmed breeding since 1980. There appears plenty of suitable habitat for European Golden Plover, but there are few recorded breeding attempts. Similarly Common Redshank and Dunlin could breed, but no other species would be expected to nest regularly.

Land birds

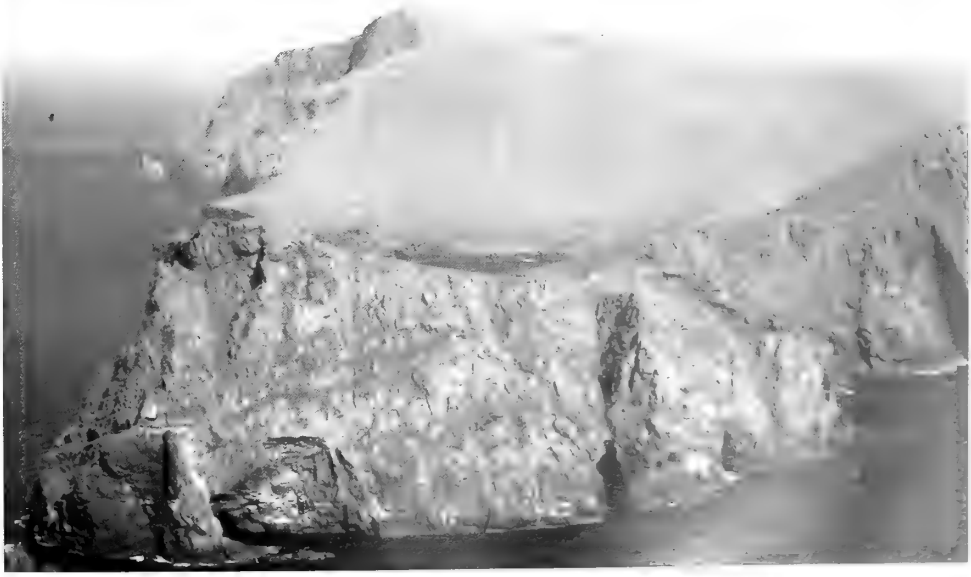
Only 7 species now breed regularly (Table 13) the lowest total since records began. Twite and Eurasian Tree Sparrow bred occasionally up to 1971 and if the Corn Bunting was ever a regular nesting species it died out soon after the deterioration of agriculture (Williamson & Boyd 1960). Peregrine Falcons were regular breeders up to 1939 and between 1987 and 1997; birds have been present each spring since then and regular breeding may resume. The range of habitat available is so restricted that it is difficult to see which other species could find an ecological niche, although House Martins, Sky Larks, Pied and Yellow Wagtails have bred on occasions. Perhaps there are too few insects in most years to encourage insectivorous birds to breed.

Migrants

The many interesting birds seen and collected by G Stout and Eagle Clarke in September-October 1910 and 1911 gave St Kilda a reputation as a good place to see rare birds. However, regular observations, started with the restoration of a resident human population on the island in 1957, showed that these pioneering ornithologists had been very lucky and those months must be regarded as exceptional (Harris & Murray 1978). A total of 228 migratory species (including some like Northern Wheatear and Meadow Pipit, which also breed) have been recorded, but of these, 54 only 2 to 5 times and 45 only once. Even in the best year for variety (2000), only 140 species, including breeding birds were recorded. Owing to the isolated position of the islands, the only regular migrants are the relatively few species which nest in Iceland and Greenland. In spring, Northern Wheatear, Meadow Pipit, White Wagtail and Redwing are common and there are usually a few ducks, geese, swans, Merlin, Dunlin, Common Redshank and Mew Gulls. In autumn, the same 4 passerines are common, and there are usually a few Ringed Plover, Red Knot, Dunlin, Sanderling and Ruff. Most other species can be regarded as lost individuals, either overshooting mainland Britain during their spring migration (eg hirundines, warblers, chats, Spotted Flycatcher), or by being drifted westwards towards the open Atlantic by easterly winds with overcast skies in the autumn (e.g. Willow Warbler, Pied Flycatcher, the less common warblers). The 21 American species were obviously completely lost, but it is remarkable that so many have found their way to the island and there are now 5 or more records for Baird's Sandpiper, Pectoral Sandpiper and American Golden Plover. Other species will presumably be added to the island list in the future (there have been 49 additions since the 1978 list), but there are unlikely to be any other regular land bird migrants. More information is needed on seabird migration. Although shearwater passage has been noted in some springs the offshore movements of species such as skuas and terns is unknown and they could well be regular visitors, particularly in autumn.

The future

All the populations of seabirds, with the exceptions of the large gulls and the Black-legged Kittiwake appear to be flourishing and are not at present under threat from human activities. However, 2 incidents have shown that we cannot be complacent about the possibility of inflicting major damage on St Kilda and its birds. On 9 December 1981 the 101,000 tonne oil tanker *Maersk Angus* lost engine power and drifted helplessly between Hirta and Boreray. Only calm seas enabled tugs to bring the vessel under control, but not before it had drifted within 2km of the Boreray coast. A major pollution incident was averted by luck, not good judgement, and there is nothing to prevent a similar incident occurring in the future. If deep sea oil drilling goes ahead in the seas between the Hebrides and Rockall, tanker traffic would increase, and with it an increased threat to the well-being of these important seabird colonies. However, a more likely danger is that Common Rats *Rattus norvegicus* or Mink *Lutreola lutreola* may be introduced accidentally on Hirta and possibly Dun. Indeed, it is surprising that it has not already happened, given that the army base has been supplied by landing craft discharging open trailers preloaded in South Uist. No precautions were taken to trap or poison potential stowaways, until the grounding on 16 October 2000 of the landing craft '*Elektron*' in Village Bay, emphasising such measures were long overdue. Such precautions are welcome, but cannot guarantee that Rats in particular will not make it ashore on Hirta. If they did they would threaten the burrow nesting species and the only land bird of any consequence, the well marked endemic subspecies of Winter Wren.



Hirta as seen from Soay with the Cambir in the foreground, Mullach Mor and the summit of Conachair behind and below, Mina Stac (S Murray).

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Conachair (430m), the highest point on Hirta, and Oiseval (292m) (S Murray).

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Northern Gannets on the west cliffs of Boreray (J Vaughan/SNH).

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